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us-10-083-336a-8.rsp

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                62 LALDVINAYVVGYRAGNSAYFFHPDNQEDA-EALTHLFIDVQNRYTFAFGGNYDRLEQLA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121 GNLRENIELGNGPLBEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRT 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9 INFTTAGATVQSYTNFIRAVR-----GRLTVLP-NRVGLPINQRFILVELSNHAELSVT 61
                                                                             60S RIBOSOMAL SUBUNITS.
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ABREA ABRER

ABREA ABRER

STANDARD; PRI; 527 AA.

15-DEC-1998 (Rel. 37, Last sequence update)

15-DEC-1998 (Rel. 37, Last sequence update)

28-FEB-2003 (Rel. 41, Last annotation update)

28-FEB-2013 (Rel. 41, Last annotation update)

Abrin-b precursor (Contains: Abrin-b A chain (rRNA N-glycosidase)

(EC 3.2.221; Abrin-b B chain).

Abrus precatorius (Indian licorice) (Crab's eye).

Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;

Spermatophyta; Aggnoliophyta; eudicotyledons; core eudicots; Rosidae;

eurosids I; Fabales; Fabaceae; Papilionoideae; Abreae; Abrus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            16; Gaps
                                                                                                                 specific adenosine on the 28S rRNA.
SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
TYPE 1 RIP SUBFRAILY:
                                                                 -!- FUNCTION: ABORTION-INDUCING PROTEIN. IT INACTIVATES EUKARYOTIC
                                                                                                                                                                                                                                                                                                               EMBL; AB000666; BAA21786.1; -.
PIR; JC5606; JC5606.
PIR; JU0393; JU0393.
HSSP; P09989; JUMJ.
InterPro; IPR001574; RIP.
Pfam; PF00161; RIP; 1.
PRINTS; PR00396; SHIGARICIN.
PROSITE; PS00275; SHIGARICIN.
PROSITE; PS00275; SHIGARICIN; 1.
PROSITE; PROSITE; PROTICE; Protein synthesis inhibitor; Hydrolase;
                 "The complete amino acid sequence of an abortifacient protein,
Toyokawa S., Takeda T., Kato Y., Wakabayashi K., Ogihara Y.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        33.8%; Score 326; DB 1; Length 289; 39.6%; Pred. No. 5.5e-23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       883D3E3242887B26 CRC64;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            44; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KARASURIN-C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KARASURIN-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         POTENTIAL.
                                             Chem. Pharm. Bull. 39:1244-1249(1991)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         183 E
31704 MW;
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270
270
289
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24 27
271 28
183 16
289 AA;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=3816;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181 RI 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Toxin; Signal
SIGNAL
                                 karasurin."
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PROPEP
ACT SITE
SEQUENCE
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the Buropean Bioinformatics Institute. There are no restrictions on its mee by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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R PIR; 532440; S32430.

R HSSP; P11140; 1ABR.

InterPro; IPR000772; Ricin B lectin.

R InterPro; IPR001574; RIP.

R Pfam; PF00165; Ricin B lectin; 6.

R PRINTS; PR00161; RIP; I.

R PRINTS; PR00161; RIP; I.

R PROSTITE; PS00236; SHIGARICIN.

R PROSTITE; PS00275; SHIGA RICIN; 1.

Plant defense; Hydrolase; Protein synthesis inhibitor; Toxin; Repeat; Glay Glycoptotein; Lectin; B ABRIN-B A CHAIN.

CHAIN
                                                                                                                                                                                                                                                                                                one
                                                                                                                                                                                                                                                                                                           specific adenosine on the 28s rNA.
-!- SUBUNIT ID DISTRIBE-LINKED DIMER OF A AND B CHAINS.
-!- DOMAIN: THE B CHAIN IS COMPOSED OF TWO DOMAINS, EACH DOMAIN
CONSISTS OF 3 HOMOLOGOUS SUBDOMAINS (ALPHA, BETA, GAMMA).
-!- SIMILARITY: IN THE N-TERMINAL SECTION, BELONGES TO THE RIBOSOME-
INACTIVATING PROTEIN FAMILY. TYPE 2 RIP SUBFAMILY.
-!- SIMILARITY: Contains 2 ricin B-type lectin domains.
                                                                                                                                                                                                                                                                                               -!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at
                                                                                                             MEDLINE=93169023; PubMed=7763422;

Kimura M., Sumizawa T., Funatsu G.;

Kimura M., Sumizawa T., Funatsu G.;

Kimura M., Sumizawa T., Funatsu G.;

The complete amino acid sequences of the B-chains of abrin-a and abrin-b, toxic proteins from the seeds of Abrus precatorius.";

Biosci. Biotechnol. Biochem. 57:166-169(1993).

-!- FUNCTION: THE A CHAIN IS REPONSIBLE FOR INHIBITING PROTEIN SYNTHESIS THROUGH THE CATALYTIC INACTIVATION OF 60S RIBOSOMAL SHEIN-A IS MORE TOXIC THAN RICIN.

-!- FUNCTION: THE B CHAIN IS A GALACTOSE-SPECIFIC LECTIN THAT PACLILITATES THE BINDING OF ABRIN TO THE CELL MEMBRANE THAT PRECEDES ENDOCYTOSIS.
              Hung C.-H., Lee M.-C., Lee T.C., Lin J.-Y.;
"Primary structure of three distinct isoabrins determined by cDNA
sequencing. Conservation and significance.";
J. Mol. Biol. 229:263-267(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N-LINKED (GLCNAC. . .) (POTENTIAL).
N -> D (IN REF. 2).
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BY SIMILARITY.
BY SIMILARITY.
PYRROLIDONE CARBOXYLIC ACID (BY
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BY SIMILARITY.
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RICIN B-TYPE LECTIN 1.
RICIN B-TYPE LECTIN 2.
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2-ALPHA.
2-BETA.
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MEDLINE=93132798; PubMed=8421313;
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                                                                                    SEQUENCE OF 260-527.
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CARBOHYD
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57 ELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRL 116
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                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 1; Length 527;
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ches 69; Indels
                                                                                                                                                                                                                                                                                                                                                                         3253AE490CE9494A CRC64;
                                                                             L - M (IN RBF 2) (IN R
                             REF.
                                                                                                                                                                                                                                                                                                                                                                                                                               33.5%; Score 323; DB
43.9%; Pred. No. 2.1e
tive 21; Mismatches
  NI)
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  N ^-
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Matches 83; Conservative
                                                                                   177 EMRTRIRYN 185
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  2291
3350
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4431
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Bukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots, Rosidae,
eurosids I, Cucurbitales, Cucurbitaceae, Bryonia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             immunoconjugates.";
Bioconj. Chem. 5:423-429(1994).
-!- FUNCTION: RIBOSOME-121 ANCTIVATING PROTEIN OF TYPE 1, INHIBITS
-!- FUNCTION: RIBOSOME-IN ANIMAL CELLS (BY SIMILARITY).
-!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at or specific adenosine on the 28S rRNA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
TYPE 1 RIP SUBFAMILY.
                                                                                                                                                                                                                                                                                                                  Siegall C.B., Gawlak S.L., Marquardt H.;
"Bryodin 2 a ribosome-inactivating protein isolated from the plant
Bryonia dioica.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Characterization of ribosome-inactivating proteins isolated from
RESULT

RIP2 BRYDI

STANDARD;

AC P98184; Q9S840;

DT 16-OCT-2001 (Rel. 40, Last sequence update)

DT 16-Nord-2003 (Rel. 41, Last annotation update)

DT 28-FEB-2003 (Rel. 41, Last annotation update)

DT 28-FEB-3003 (Rel. 41, Last annotation update)

DF 28-FEB-3003 (Rel. 41, Last annotation update)

FRIDOSOME-inactivating protein bryodin II precursor (rRNA N-Ase) (EC 3.2.2.22) (BD2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Siegall C.B., Gawlak S.L., Chace D., Wolff E.A., Mixan B.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bryonia dioica and their utility as carcinoma-reactive
                                                                                                                                                                                                                                                                                                                                                                                Patent number US5597569, 28-JAN-1997.
                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=95151812; PubMed=7849072;
                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 22-42.
                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                              NCBI_TaxID=3652;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Van Damme E.J., Barre A., Rouge P., Van Leuven F., Peumans W.J.;
"Characterization and molecular cloning of Sambucus nigra agglutinin V (nigrin b), a GalNAc-specific type-2 ribosome-inactivating protein from the bark of elderberry (Sambucus nigra).";
Eur. J. Biochem. 237:505-513(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61 TLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RIBOSOME-INACTIVATING PROTEIN BRYODIN II
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9 INFITAGATVQSYTNFIRAVRGRLTV-LPNRVGLPINQ-----RFILVELSNHAELSV
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels 17; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           [Contains: Nigrin b A chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Girbes T., Citores L., Ferreras J.M., Rojo M.A., Iglesias R., Munoz R., Arias F.J., Calonge M., Garcia J.K., Mendez E.; "Isolation and partial characterization of nigrin b, a non-toxic novel type 2 ribosome-inactivating protein from the bark of Sambucus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Plant Mol. Biol. 22:1181-1186(1993).
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01-0CT-1993 (Rel. 27, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
28-FEB-2003 (Rel. 41, Last amnotation update)
Nigrin b precursor (Agglutinin V) (SNAV) [Contains: Nigrin b A chaismous nigra (Buropean elder)
Sambucus nigra (Buropean elder)
Eukaryota, Viridiplantee, Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .) (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                   PROSITE; PS00275; SHIGA RICIN; 1.
Plant defense; Protein Synthesis inhibitor; Hydrolase; Toxin;
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NCBI_TaxID=4202;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -LINKED (GLCNAC. . .) (PC
C52BE2F6A873769C CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  33.2%; Score 320.5; DB 1;
46.0%; Pred. No. 1.7e-22;
tive 24; Mismatches 54;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BY SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Multigene family; Glycoprotein; Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRT;
                                                                                                                                                                                                                                                                   EMBL; 134238; -; NOT_ANNOTATED_CDS.
HSSP; P09989; 1MRJ.
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MEDLINE=94003077; PubMed=8400135;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   25 N-
30754 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE OF 26-49 AND 298-321.
                                                                                                                                                                                                                                                                                                                                                                                                 PRINTS; PR00396; SHIGARICIN
                                                                                                                                                                                                                                                                                                                                       InterPro; IPR001574; RIP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity 46.0
nes 81; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     282
                                                                                                                                                                                                                                                                                                                                                                  Pfam; PF00161; RIP; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   25
282 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
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183
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142 DNLETAANTRRESIELGPSPLDGAITSLYHGD----SVARSLLVVIQMVSEAARFRY 194
                                        174 IEGEMRTRIR 183
                                                                          195 IEQEVRRSLQ 204
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE OF 24-66.
                                                                                                                                                                                                                                                                                                                                                                                  NCBI_TaxID=3652;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bryonia dioica.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Marquardt H.;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                TISSUE=Leaf
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                                                                                                                                    RESULT 9
RIP1 BRYDI
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                                                                                                                                                                                                                                                                    This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation—the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage, by and for commercial,
                                                                                                                                                                                                                                                                                                                                                  noved. Usage by and for commercial
(See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           56 AELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAI -- THLFTDVQNRYTFAFGGNY 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     98 NGNTVTLAVDVTNLYVVAFSGNANSYFF-----KDATEVQKSNLFVGTKQN-TLSFTGNY 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6 YPIINFTTAGATVQSYTNFIRAVR-----GRLTVLPNRVGLPINQRFILVELSNH 55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         28 YPSVSFNLDGAKSATYRDFLSNLRKTVATGTYEVNGLPVLRRESBVQVKSRFVLVPLTNY 87
                                                              THE
                                                                                                                                          one
PROTEIN SYNTHESIS BUT DOES NOT AFFECT PLANT NOR BACTERIAL PROTEIN SYNTHESIS. THE A CHAIN IS RESPONSIBLE FOR INHIBITING PROTEIN SYNTHESIS THROUGH THE CATALYTIC INACTIVATION OF GOS RIBOSOMAL SUBUNITS BY REMOVING ADDRINE FROM POSITION 4,324 OF 28 S.RNA. THE B. CHAIN IS A GALACTOSE-SPECIFIC LECTIN THAT FACILITATES THE BINDING OF NIGRIN B TO THE CELL MEMBRANE THAT PRECEDES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PROSITE; PS002/5; SHIGA_RICIN; 1.
PROSITE; PS50231; RICIN B_LECTIN; 2.
Plant defense; Hydrolase; Protein synthesis inhibitor; Toxin; Repeat; Glycoprotein; Lectin; Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         25; Gaps
                                                                                                                                  CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at specific adenosine on the 28S rRNA.
SUBUNIT: DISULFIDE-LINESD DIMERS OF A AND B CHAINS.
SIMILARITY: IN THE N-TERMINAL SECTION; BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY. TYPE 2 RIP SUBFAMILY.
SIMILARITY: Contains 2 ricin B-type lectin domains.
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N-LINKED (GLCNAC. .
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NIGRIN B B CHAIN.
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                                                                                                                                                                                                                                                                                                                                                                      entities requires a license agreement (Son send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro; IPR000772; Ricin_B_lectin.
InterPro; IPR001574; RIP.
Pfam; PF00652; Ricin_B_lectin; 6.
Pfam; PF00161; RIP; I.
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SMART; SM00458; RICIN; 2.
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hes 73; Conservative
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This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
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-!- PTM: APPEARS TO UNDERGO PROTECLYTIC CLEAVAGE IN THE C-TERMINAL TO PRODUCE A SHORTER PROTEIN.
RIPI BRYDI STANDARD; PRT; 290 AA.
P33168; QS6819;
01-0CT-1993 (Rel. 27, Created)
16-0CT-2001 (Rel. 40, Last sequence update)
28-FRBE-2003 (Rel. 41, Last annotation update)
Ribosome-inactivating protein bryodin I precursor (rRNA N-glycosidase)
(EC 3:2:22) (BD1).
                                                                                                                                                                                                                                                                                                   Bryonia dioica (Red bryony).
Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta; Magnoliophyta, eudicotyledons, core eudicots, Rosidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Molecular, biological, and preliminary structural analysis of recombinant bryodin 1, a ribosome-inactivating protein from the plant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BIOTECHNOLOGY: Especially useful as immunotoxin for pharmacological applications as it has low toxicity in rats and mice but is potent once inside target cells.

SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.

TYPE 1 RIP SUBFAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Montecucchi P.C., Lazzarini A.M., Barbieri L., Stirpe F., Soria M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Characterization of ribosome-inactivating proteins isolated from Bryonia dioica and their utility as carcinoma-reactive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cloning and expression of a gene encoding bryodin 1 from Bryonia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gawlak S.L., Neubauer M., Klei H.E., Chang C.Y.Y., Einspahr H.M.,
Siegall C.B.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bioconj, Chem. 5:423-429 (1994).
-!- FUNCTION: RIBOSOME-INACTIVATING PROTEIN OF TYPE 1, INHIBITS PROTEIN SYNTHESIS IN ANIMAL CELLS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "N-terminal sequence of some ribosome-inactivating proteins.";
Int. J. Pept. Protein Res. 33:263-267(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A., AND X-RAY CRYSTALLOGRAPHY (2.1 ANGSTROMS)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=95151812; PubMed=7849072;
Siegall C.B., Gawlak S.L., Chace D., Wolff B.A., Mixan B.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Cucurbitales; Cucurbitaceae; Bryonia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Patent number US5541110, 30-JUL-1996
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Biochemistry 36:3095-3103(1997).
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35.7%; Pred. No. 4.8e-21;
ive 45; Mismatches 56; Indels 16; Gaps
                                                                                                                                                                 RIBOSOME-INACTIVATING PROTEIN BRYODIN I.
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N-LINKED (GLCNAC. ..) (POTENTIAL).
E-K: REDUCES ACTIVITY 10-FOLD.
RSSIS -> LRHXI (IN REF. 3).
                                                                            Pfam; PF00161; RIP; 1.
PRINTS; PR00396; SHIGARICIN.
PROSITE; PS00275; SHIGARICIN; 1.
Plant defense; Protein Synthesis inhibitor; Hydrolase; Toxin;
                                                                                                                                                                            MISSING IN MATURE PROTEIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             31788 MW; E966CD9C031A42DB CRC64;
                                                                                                                                  3D-structure, Multigene family, Glycoprotein, Signal. SIGNAL
                                                                                                                                                                                            BY SIMILARITY.
or send an email to license@isb-sib.ch).
                     EMBL; 124020; -; NOT_ANNOTATED_CDS.
PIR; S16491; S16491.
                                                  PDB; IBRY; 04-MAR-98.
InterPro; IPR001574; RIP.
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121 GNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRT 180
                        PRECEDES ENDOCYTOSIS.

-!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at one specific adenosine on the 28S TRNA.
-!- SUBUNIT: DISULFIDE-LINKED DIMER OF A AND B CHAINS.
-!- DOMAIN: THE B CHAIN IS COMPOSED OF TWO DOMAINS, EACH DOMAIN CONSISTS OF 3 HOMOLOGOUS SUBDOMAINS (ALPHA, BETA, GAMMA).
-!- SIMILARITY: IN THE N-TERMINAL SECTION; BELONGS TO THE RIBOSOME-
                                                                                                                                                                                                                         ABRA ABRRR STANDARD; PRT; 528 AA.
P11140, P26889;
01-JUL-1989 (Rel. 1, Created)
01-JUL-1989 (Rel. 29, Last sequence update)
28-FBB-2003 (Rel. 41, Last amnotation update)
Abrin-a precursor [Contains: Abrin-a A chain (rRNA N-glycosidase)
(BC 3.2.221; Abrin-a B chain)
Abrus precatorius (Indian licorice) (Crab's eye).
BUKaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Fabales; Fabaceae; Papilionoideae; Abreae; Abrus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Funatsu G., Taguchi Y., Kamenosono M., Yanaka M.; "The complete amino acid sequence of the A-chain of abrin-a, a toxic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE=93132798; PubMed=8421313;
Hung C.-H., Lee M.-C., Lee T.C., Lin J.-Y.;
Pyrlmary scructure of three distinct isoabrins determined by cDNA sequencing. Conservation and significance.";
J. Mol. Biol. 229:263-267(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=95333188; PubMed=7608980;
Tahirov T.H., Lu T.-H., Liaw Y.-C., Chen Y.-L., Lin J.-Y.;
Tahirov T.H., Lu T.-H., Liaw Y.-C., Chen Y.-L., Lin J.-Y.;
Tahirov T.H., Lu T.-H., Liaw Y.-C., Chen Y.-L., Lin J.-Y.;
J. Mol. Biol. 250:354-357(1995)

-!- FUNCTION: THE A CHAIN IS RESPONSIBLE FOR INHIBITING PROTEIN
SYNTHESIS THROUGH THE CATALYTIC INACTIVATION OF 60S RIBOSOMAL
SUBMINTS BY REMOVING ADENINE FROM POSITION 4,324 OF 28 S.RNA.
ABRIN-A IS MORE TOXIC THAN RICIN.
-!- FUNCTION: THE B CHAIN IS A GALACTOSE-SPECIFIC LECTIN THAT
FACILITATES THE BINDING OF ABRIN TO THE CELL MEMBRANE THAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=91201329; PubMed=2016300;
Evensen G., Mathiesen A., Sundan A.;
"Direct molecular cloning and expression of two distinct abrin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE OF 262-528.
MEDLINE=92371656; PubMed=1505674;
Chen Y.-L., Chow L.-P., Tsugita A., Lin J.-Y.;
The complete primary structure of abrin-a B chain.";
FEBS Lett. 309:115-118(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protein from the seeds of Abrus precatorius."; Agric. Biol. Chem. 52:1095-1097(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      X-RAY CRYSTALLOGRAPHY (2.14 ANGSTROMS).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
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                                                                                 181 RI 182
                                                                                                                        kV 198
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Similarity

Best Local

Matches

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INACTIVATING PROTEIN FAMILY. TYPE 2 RIP SUBFAMILY.

-!- SIMILARITY: Contains 2 ricin B-type lectin domains.

--- SIMILARITY: Contains 2 ricin B-type lectin domains.

--- SIMILARITY: Contains 2 ricin B-type lectin domains.

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31.5%; Score 303.5; DB 1;
41.1%; Pred. No. 1.4e-20;
iive 26; Mismatches 64;
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Matches 76; Conservative
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Gaps

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                                                                   61 TLALDVTNAYVVGYRAGNSAYFFH--PDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQ 118
                                                                                                   65 EVGIDVINAYVVAYRAGIQSYFLRDAPSSASD----YLFIGI-DQHSLPFYGIYGDLER 118
                                                                                                                                         119 LAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEM 178
                                                                                                                                                             119 WAHQSRQOIPIGLQALTHGIS---FFRSGGNDNEEKARTLIVIIQMVAEAARFRYISNRV 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       59 SVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQ 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              119 LAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIOMISEAARFQYIEGEM 178
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                9 INFITAGATVQSYTNFIRAVRGRL-----TVLPNRVGLPINQRFILVELSNHAEL 58
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Islam M.R., Hirayama H., Funatsu G.;

"Complete amino acid sequence of luffin-b, a ribosome-inactivating protein from sponge gourd (Luffa cylindrica) seeds.";

Agric. Biol. Chem. 55:229-338(1991).

-!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at one specific adenosine on the 28S rRNA.

-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.

TYPE I RIP SUBFAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Luffa cylindrica (Smooth loofah) (Sponge gourd).
Bukaryota, Vizidiplantae, Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Cucurbitales; Cucurbitaceae; Luffa.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  21; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRINTS; PR00396; SHIGARICIN.
PROSITE; PS00275; SHIGA RICIN; 1.
Plant defense; Antiviral; Protein synthesis inhibitor; Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          30.4%; Score 293.5; DB 1; Length 250; 33.7%; Pred. No. 4.7e-20; tive 46; Mismatches 57; Indels 21.
                                                                                                                                                                                                                                                                                                                                                                       01-AUG-1991 (Rel. 19, Created)
01-AUG-1991 (Rel. 19, Last sequence update)
Rel. 19, Last annotation update)
Ribosome-inactivating protein luffin-B (rRNA N-glycosidase)
(EC 3.2.2.22)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      250 AA; 27293 MW; F01A8DC8A1078700 CRC64;
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                                                                                                                                                                                                                                                                                                                                       PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE=91248488; PubMed=1368666;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro; IPR001574; RIP. Pfam; PF00161; RIP; 1.
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                                                                                                                                                                                                                                                                                                                                         STANDARD;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HSSP; P16094; 1AHC
                                                                                                                                                                                                              RTRIR 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=3670;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       160
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                                                                                                                                                                                                                                                                                                                                         RIPB LUFCY
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between the Swiss Institute of Bioinformatics and the EMBL outstation. the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    88 MAVDVINVYIMGYLVNGTSYFF---NETDAQLASKFVFQGTKSITLFYSGNYQKLQSVAR 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                62 LALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLAG 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          122 NLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICTQMISEAARFQYIEGEMRTR 181
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                                                                                                                                                                                                                                    Yamada T., Ohki S.T., Osaki T.,
"Cloning and analysis of a cDNA coding a putative ribosome-
inactivating protein from Cucumis figarei.";
Plant Biotechnol. 17:337-340(2000).
-!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at one
specific adenosine on the 28S rRNA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
TYPE 1 RIP SUBFAMILY.
                                                                                                                                 Eukaryota, Viridiplantae, Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Cucurbitales; Cucurbitaceae; Cucumis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         28 VKFSLLGSNHKSYSKFITSMRNALPNAGDIYNIPLLVPSISGSRRYILMQLSNYEGNTIT
                            16-OCT-2001 (Rel. 40, Created)
16-OCT-2001 (Rel. 40, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Putative ribosome-inactivating protein precursor (rRNA N-glycosidase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   15; Gaps
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PUTATIVE RIBOSOME-INACTIVATING PROTEIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRINTS; PR00396; SHIGARICIN.
PROSITE: P800275; SHIGA RICIN; 1.
Plant defense; Antiviral; Protein synthesis inhibitor; Hydrolase;
Toxin; Signal.
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N-LINKED (GLCNAC. . .) (POTENTIAL).
N-LINKED (GLCNAC. . .) (POTENTIAL).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4EFD4966E604DA41 CRC64;
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286 AA.
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InterPro; IPR001574; RIP.
Pfam; PF00161; RIP; 1.
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STANDARD;
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110
252
286 AA;
                                                                                                                                                                                    NCBI_TaxID=131071;
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                                                                                                                                                                                                                      SEQUENCE FROM N.A
                                                                                                               Cucumis figarei
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               90;
RIPI CUCFI
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CARBOHYD
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                Q9FRX4;
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This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation-the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     58 LSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLE 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     118 QLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGE 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9 INFITAGATVQSYTNFIRAVRGRLTVLPNRVGLPIN------QRFILVELSNHAE 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              22 VRFSLSGSSSTSYSKFIGDLR---KALPSN-GTVYNITLLLSSASGASRYTLMTLSNYDG 77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE=92288316; PubMed=1600156;
Kataoka J., Habuka N., Miyano M., Masuta C., Koiwai A.;
"Nucleotide sequence of cDNA encoding alpha-luffin, a ribosome-inactivating protein from Luffa cylindrica.";
Plant Mol. Biol. 18:1199-1202(1992).
-!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at one
                                                                                                                                                                                                                                                                        Luffa cylindrica (Smooth loofah) (Sponge gourd).
Eukaryota, Viridiplantae, Streptophyta, Embryophyta; Tracheophyta;
Spermatophyta, Magnoliophyta; eudicotyledons; core eudicots; Rosidae,
eurosids I; Cucurbitales; Cucurbitaceae; Luffa.
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Best Local Similarity 33.3%; Pred. No. 3e-18;
Matches 63; Conservative 42; Mismatches 61; Indels 23; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      specific adenosine on the 288 rRNA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
TYPE 1 RIP SUBFAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RIBOSOME-INACTIVATING PROTEIN LUFFIN-
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Plant defense; Antiviral; Protein synthesis inhibitor; Hydrolase;
                                                                                                  01-DEC-1992 (Rel. 24, Created)
01-DEC-1992 (Rel. 24, Last sequence update)
Rel. 41, Last annotation update)
Ribosome-inactivating protein luffin-alpha precursor (rRNA)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    179 179 BY SIMILARITY.
277 AA; 30212 MW; EA17FC27998C25AC CRC64;
                                 277 A.A.
                                     PRT;
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InterPro; IPR001574; RIP.
Pfam; PF00161; RIP; 1.
PRINTS; PR00396; SHIGARICIN.
                                     STANDARD;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
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RIP2_MOMBA
ID _RIP2_MOMBA
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                                 RIPA LUFCY
Q00465;
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SEQUENCE
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RIPA LUPCY
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AC ONG AGA
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286 AA.

PRT;

STANDARD;

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2 VPKOYPIINFTTAGATVQSYTNFIRAVRGRLTVLPNRVGLPI-----NQRFILVELSN 54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ortigao M., Better M.;
"Momordia II, a ribosome inactivating protein from Momordica
balsamina, is homologous to other plant proteins.";
Nucleic Acids Res. 20:4662-4662(1992).
-!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at one
specific adenosine on the 28s rRNA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
TYPE I RIP SUBFAMILY.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRINTS; PR00396; SHIGARICIN.
PROSITE; PS00275; SHIGA_RICIN; 1.
Plant defense; Protein synthesis inhibitor; Hydrolase; Toxin; Signal;
                  01-DEC-1992 (Rel. 24, Created)
01-DEC-1992 (Rel. 24, Last sequence update)
15-SEP-2003 (Rel. 42, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
16-SEP-2003 (Rel. 42, Last annotation update)
17-SEP-2003 (Rel. 42, Last annotation update)
18-Jycosidase) (Rel. 3.2.2.22)
18-Jycosidase) (Rel. 3.2.2.22)
18-Jycosidase) (Bitter gourd) (Balsam pear)
18-Jycosidase, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta, Spermatophyta, Magnoliophyta, eudicotyledons, Core eudicots; Rosidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             71; Indels 16; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RIBOSOME-INACTIVATING PROTEIN MOMORDIN
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                                                                                                                                                                                                                                                                                        eurosids I; Cucurbitales; Cucurbitaceae; Momordica.
NCBI_TaxID=3672;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       28.4%; Score 274; DB 1; 34.0%; Pred. No. 3.5e-18; ative 39; Mismatches 71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       286 AA.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=93027170; PubMed=1408771;
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ID RIP1_MOMCH STANDARD;

A P16094; P24697;

DT 01-APR-1990 (Rel. 14, Created)
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InterPro; IPR001574; RIP. GlycoSuiteDB; P16094; -

Pfam; PF00161; RIP;

PDB; 1MRI; 07-FEB-95. PDB; 1F8Q; 21-NOV-01.

31-MAY-94. 07-FEB-95. 07-FEB-95.

1MRG; 1MRH;

PDB;

22-JUN-94

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X-RAY CRYSTALLOGRAPHY (2.0 ANGSTROMS).
MEDLINE=95344383; PubMed=7619070;
Huang Q., Liu S., Tang Y., Jin S., Wang Y.;
Huang Q., Liu S., Tang Y., Jin S., Wang Y.;
Studies on crystal structures, active-centre geometry and depurinating mechanism of two ribosome-inactivating proteins.";
Biochem. J. 309:285-298(1995).
-!- CATALIVITY: Endohydrollysis of the N-glycosidic bond at one
01-MAR-1992 (Rel. 21, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Ribosome-inactivating protein momorain I precursor (rRNA
N-Glycosidase) (EC 3.2.2.23) (Alpha-momorcharin) (Alpha-MMC).
Momordica charantia (Bitter gourd) (Balsam pear).
Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Cucurbitales; Cucurbitaceae; Momordica.
                                                                                                                                                                                                                                                                                                                                                              MEDLINE-89326691; PubMed-2753596;
Montecucchi P.C., Lazzarini A.M., Barbieri L., Stirpe F., Soria M.,
                                                                                                                                                                                                                                 HO W.K.K., Liu S.C., Shaw P.C., Yeung H.W., Ng T.B., Chan W.Y.; "Cloning of the cDNA of alpha-momorcharin: a ribosome inactivating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Casellas P., Dussossoy D., Falasca A.I., Barbieri L., Guillemot J.C., Ferrara P., Bolognesi A., Cenini P., Stirpe F., "Trichokirin, a ribosome-inactivating protein from the seeds of Trichosanthes kirilowii Maximowicz. Purification, partial characterization and use for preparation of immunotoxins."; Eur. J. Blochem. 176:581-588 (1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=94356447; PubMed=8075985;
Ren J., mang Y., Dong Y., Stuart D.I.;
"The N-glycosidase mechanism of ribosome-inactivating proteins
implied by crystal structures of alpha-momorcharin.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE=94192822; PubMed=8143869;
Husain J., Tickle I.J., Wood S.P.;
"Crystal structure of momordin, a type I ribosome inactivating
                                                                                                                                                                                                                                                                                                                                                                                                              "N^terminal sequence of some ribosome-inactivating proteins."; Int. J. Pept. Protein Res. 33:263-267(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            protein from the seeds of Momordica charantia.";
FEBS Lett. 342:154-158(1994).
                                                                                                                                                                                                                                                                                       Biochim. Biophys. Acta 1088:311-314(1991)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (-RAY CRYSTALLOGRAPHY (2.16 ANGSTROMS).
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                                                                                                                                                                                                                      MEDLINE=91159486; PubMed=2001404;
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Local Similarity
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SEQUENCE
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                                                                                                                                                    This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way
                                                                                                                                                                                                                                    modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                      specific adenosine on the 28S rRNA.

-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.

TYPE 1 RIP SUBFAMILY.
                                                                                                                                                                                                                                                                                                                                                                             EMBL; X57682; CAA40869.1; -.
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1AHA; 22-JUN-94. 1AHB; 22-JUN-94. S14273; RLPUGG.

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                                                                                                                                                                                       PROSITE; PS00275; SHIGA RICIN; 1.
Plant defense; Protein Synthesis inhibitor; Hydrolase; Toxin; Signal;
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Search completed: February 10, 2004, 16:23:25 Job time: 7.27131 secs

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GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
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OM protein - protein search, using sw model

February 10, 2004, 16:17:00 ; Search time 25.0852 Seconds (without alignments) 1933.961 Million cell updates/sec Run on:

US-10-083-336A-8

1 MVPKQYPIINFTTAGATVQS.......ARFQYIEGEMRTRIRYNRRS 188 Perfect score: Sequence:

BLOSUM62 Scoring table:

Gapop 10.0 , Gapext 0.5

830525 Total number of hits satisfying chosen parameters:

830525 seqs, 258052604 residues

Searched:

Minimum DB seq length: 0 Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

SPIREMBL 23:* Database :

sp_rodent:*
sp_virus:*
sp_vertebrate:*
sp_unclassified:* 1: sp_archea:*
2: sp_bacteria:*
3: sp_tungi:*
4: sp_human:*
5: sp_invertebrate:*
6: sp_mammal:*
7: sp_mhc:* sp_organelle:*
sp_phage:* sp plant:* 10:

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sp_bacteriap:*
sp_archeap:*

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| SCHWAKLES | | | ID | 041174 | O94BW3 | Q94BW4 | Q94BW5 | Q9FV22 | Q94KE4 | 041216 | 004367 | Q9LRE3 | Q9AVR2 | 90000 | OBLPV7 | 038760 | 094582 | O8GT32 | 041611 | |
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| | | | Score | 941 | 374.5 | 372.5 | 370.5 | 368.5 | 334 | 332 | 329.5 | 326 | 323.5 | 318.5 | 317 | 310.5 | 307.5 | 307.5 | 305 | |
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ALIGNMENTS

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AM 141

AM REDLINE=92338377; PubMed=1633311;

AM ROBLINE=92338377; PubMed=1633311;

AM ROBCHS L.M., Tregear J.W., Lord J.M.;

AT RADCULAR Cloning of ricin.";

Targeted Diagn. Ther. 7:81-97(1992).

-!-CATALWITC ACTULY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE
CC --ATALWITC ACTULY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE
CC --SIMILARITY: BELONGS TRANA.

-!- SIMILARITY: BELONGS TRANA.

CC -!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.

DR RIBSP; PO2879; 1BRC

INTERPO; IPRO01572; Ricin B lectin.

DR RINTS; PRO0160; Sometor.copin.

DR PRINTS; PRO0160; Sometor.copin.

DR PRINTS; PRO0160; SICIN; 1.

BRANT: SHO0458; RICIN; 2.

DR PROSITE; PS50231; RICIN B LECTIN; 2.

DR PROSITE; PS00338; SOMATÖTROPIN. 2; 1.
                                                                                                                                            Ricinus communis (Castor bean).

Bukaryota, Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta, Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Malpighiales; Euphorbiaceae; Ricinus.
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                                                                             01-NOV-1996 (TrEMBLrel. 01, Last sequence update) 01-MAR-2003 (TrEMBLrel. 23, Last annotation update) Proficin A chain (EC 3.2.2.22) (rRNA N-glycosidase)
                                 541 AA.
                                                               01-NOV-1996 (TrEMBLrel. 01, Created)
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SEQUENCE
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RESULT 1
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176 GEMRTRI 182
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                                                                                                                                                                   SNHAELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGN 122
                                                                                                                                                     113 YDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFO 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        22
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    6 YPIINFITAGAIVQSYTNFIRAVRGRLT------VLPNRVGLPINQRFILVELSN-H 55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          patterns.";
Submitted (JTU-2001) to the EMBL/GenBank/DDBJ databases.
-! CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE SPECIFIC ADENOSINE ON THE 28S RRNA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
EMBL; AX039803; AAK82460.1; --
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Yang Q., Gong Z.Z., Liu W.Y.; "Molecular cloning of three type 2 RIP (ribosome-inactivating protein) genes encoding cinnamomin proteins and study of their expression
                                                    VLPNRVGLPINQRFILVEL
                                                                           3 PKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHDIPVLPNRVGLPINQRFILVEL
                                                                                                    SNHAELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFIDVQNRYIFAFGGN
                           Indels 10; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             15; Gaps
                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Laurales; Lauraceae; Cinnamomum.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE 2 RIBOSOME-INACTIVATING PROTEIN CINNAMOMIN III,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   38.8%; Score 374.5; DB 10; Length 580; 48.1%; Pred. No. 3.7e-27; ative 26; Mismatches 56; Indels 15;
                                                                                                                                                                                                                                                                                                                                                       Type 2 ribosome-inactivating protein cinnamomin III precursor (EC 3.2.2.22) (rRNA N-glycosidase).
  Score 941; DB 10; Length 541;
Pred. No. 2.4e-81;
0; Mismatches 0; Indels 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          580 AA; 64421 MW; 940D10F01E7FB558 CRC64;
                                                                                                                                                                                                                                                                                                                 01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
                                                   3 PKQYPIINFTTAGATVQSYTNFIRAVRGRLT-----
                                                                                                                                                                                                                                                                                           580 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     POTENTIAL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SMART; SM00458; RICIN; 2.
PROSITE; PS50231; RICIN B LECTIN; 2.
Hydrolase; Signal; Toxin.
                                                                                                                                                                                                                                                                                            PRT;
                                                                                                                                                                                                                                                                                                                                                                                 Cinnamomum camphora (Camphor tree)
   97.5%;
                                                                                                                                                                                                    173 YIEGEMRIRIRYNRRS 188
                                                                                                                                                                                                                         183 YIEGEMRTRIRYNRRS 198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRINTS; PR00396; SHIGARICIN.
Query Match
Best Local Similarity 94.9<sup>5</sup>
Matches 186; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                           PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                   NCBI_TaxID=13429;
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                                                                                                                                                                                                                                                                                                        094BW3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SIGNAL
                                                                                                                                                                                                                                                                                           094BW3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CHAIN
                                                                                                                                                                                                                                                                RESULT 2
                                                                                                                                                                                                                                                                               294BW3
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           116 LEQLAGNIRENIELGNGPLERAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIE 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               33 YQTVTFTTKNATKTSYTQFIEALRAQLASGEEPHGIPVMRDGSTVPDSKRFILVELSNWA 92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6 YPIINFTTAGATVQSYTNFIRAVRGRLTVLPNRVGLPI------NQRFILVELSN-H 55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Molecular cloning of three type 2 RIP (ribosome-inactivating protein) genes encoding cinnamomin proteins and study of their expression
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AT ONE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             patterns.";
Submitted (UN-2001) to the EMBL/GenBank/DDBJ databases.
-!- CATALYTIC ATTIVITY: BENDCHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ON SPECIFIC ADENOSINE ON THE 28S RRNA.
-!- SIMILARITY: BELOKGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
EMBL; AV039802; AAK82459.1;
-- InterPro; IPR00177; Righ.
-- InterPro; IPR001574; RIP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                            01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2003 (TrEMBLrel. 29, Last annotation update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Type 2 ribosome-inactivating protein cinnamomin II precursor
(EC 3.2.2.2) (FRNA N-glycosidase)
Cinnamomum camphora (Camphor tree)
Cinnamomum camphora (Camphor tree)
Eukaryota, Viridiplantee; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Laurales; Lauraceae; Cinnamomum.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              POTENTIAL.
TYPE 2 RIBOSOME-INACTIVATING PROTEIN
CINNAMOMIN 11.
3784289ECCEOCEPF CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; Score 372.5; DB 10; Length 580; Pred. No. 5.7e-27; 27; Mismatches 56; Indels 15;
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01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-DMR-2003 (TrEMBLrel. 23, Last annotation update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
17pe 2 ribosome-inactivating protein cinnamomin I precursor (EC 3.2.2.2) (TRNA N-glycosidase)
                                                                                                                                                           580 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   581 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SMART; SM00458; RICIN; 2.
PROSITE; PS50231; RICIN B_LECTIN; 2.
Hydrolase; Signal; Toxin.
1 32 POTENTI.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pfam; PF00652; Ricin B lectin; 6. Pfam; PF00161; RIP; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              580 AA; 64265 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Yang Q., Gong Z.Z., Liu W.Y.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRINTS; PR00396; SHIGARICIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            38.68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       47.68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           89; Conservative
                                                                                                                                                           PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     176 GEMRTRI 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 208 YRVRESI 214
208 YRVŘESÍ 214
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIE 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6 YPIINFTTAGATVQSYTNFIRAVRGRLT------VLPNRVGLPINQRFILVELSN-H 55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               33 YQTVTFTTKNATKTSYTQFIEALRAQLASGEEPHGIPVMRERSTVPDSKRFILVELSNWA 92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Xie L., Liu W.-Y., Wang E.-D.;
"Molecular cloning of cinnamomin A-, B-chain and the expression,
purification, characterization and mutagenesis of the A-Chain.";
Submitted (SEP-2000) to the EMBL/GenBank/DDBJ databases.
-! CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE
SPECIFIC ADENOSINE ON THE 28S RRNA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
EMBL; AF259548; AAF68978.2; --
                                                                                                                                                                             Submitted (JUN-2001) to the EMBL/GenBank/DDBJ databases.
-!- CATALYTIC EMDOHYNDCLYSIS OF THE N-GLYCOSIDIC BOND AT ONE SPECIFIC ADENOSINE ON THE 28S RANA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
EMBL, AR0398011, ARK8448.1; -.
InterPro; IPR000772; Ricin_B_lectin.
                                                                                   SEQUENCE FROM N.A.

Yang Q., Gong Z.Z., Liu W.Y.;

"Molecular cloning of three type 2 RIP (ribosome-inactivating protein)
genes encoding cinnamomin proteins and study of their expression
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           15; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-MAR-2001 (TrEMBLrel. 16, Created)
01-MAR-2001 (TrEMBLrel. 16, Last sequence update)
01-0CT-2002 (TrEMBLrel. 22, Last annotation update)
Type II ribosome_inactivating protein cinnamomin (EC 3.2.2.22) (rRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cinnamomum camphora (Camphor tree).
Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, Laurales, Lauraceae, Cinnamomum.
               Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Laurales; Lauraceae; Cinnamomum.
                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE 2 RIBOSOME-INACTIVATING PROTEIN CINNAMOMIN I.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 10; Length 581;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    38.4%; Score 370.5; DB 10; Length 48.1%; Pred. No. 8.8e-27; Live 25; Mismatches 57; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GE8F5FB8FBA3D196 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      549 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                            POTENTIAL.
                                                                                                                                                                                                                                                                                                                                              PRINTS; PR00396; SHIGARICIN.
SMART; SMOGHS9; RICIN; 2.
PROSITE; PSS0231; RICIN B_LECTIN; 2.
Hydrolase; Signal; Toxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRT;
Cinnamomum camphora (Camphor tree)
                                                                                                                                                                                                                                                                                                           Pfam; PF00652; Ricin B lectin; 5.
Pfam; PF00161; RIP; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 581 AA; 64215 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         90; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRELIMINARY;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local Similarity
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                                                    NCBI_TaxID=13429;
                                                                                                                                                             patterns.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
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Matches
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                                                                                                                                                                                                                                                                                                                                                                                                                       116 LEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIE 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               59 SVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDA-EAITHLFTDVQNRYTFAFGGNYDRLE 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                     118 LEGVAGERREFILLGMDPLENAISALWISNL--NOORALARSLIVVIOMVAEAVRFRFIE 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9 INFTTAGATVQSYTNFIRAVRGRLTVLPN------RVGLPINQRFILVELSNHAEL 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 YOTVTFTTKKATKTSYTQFIEALRAQLASGEEPHGIPVMRERSTVPDSKRFILVELSNWA 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Yuan H., Wang L., Wang Y., An C., Chen Z.;
Submitted (MAR-2001) to the EMBL/GenBank/DDBJ databases.
-!- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE
SPECIFIC ADENOSINE ON THE 28S RRNA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
EMBL; AF367252; AAK52960.1; --
                                                                                                                                                                                                                                                                         6 YPIINFTTAGATVQSYTNFIRAVRGRLT------VLPNRVGLPINORFILVELSN-H
                                                                                                                                                                                                                                                                                                                                                56 AELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bukaryota, Viridiplantae, Streptophyta; Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots, Rosidae,
eurosids I, Cucurbitales, Cucurbitaceae, Trichosanthes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    <u>..</u>
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                                                                                                                                                                                                                                      15;
                                                                                                                                                                                                Query Match 38.2%; Score 368.5; DB 10; Length 549; Best Local Similarity 48.1%; Pred. No. 1.3e-26; Matches 90; Conservative 25; Mismatches 57; Indels 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             34.6%; Score 334; DB 10; Length 289; 38.9%; Pred. No. 1e-23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Trichosanthin precursor (EC 3.2.2.22) (FRNA N-glycosidase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    49; Indels
                                                                                                                                                           549 AA; 60648 MW; 02607FE607CA44B0 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE 289 AA; 31706 MW; A6D5602549CA5657 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Last sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Trichosanthes kirilowii (Mongolian snake-gourd)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           289 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    42; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TRICHOSANTHIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        POTENTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-DEC-2001 (TrEMBLrel. 19, Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRINTS; PR00396; SHIGARICIN.
SMART; SM00458; RICIN; 2.
PROSITE; PS50231; RICIN_B_LECTIN; 2.
InterPro; IPR000772; Ricin_B_lectin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRT;
                 InterPro; IPR001574; RIP. — —
Pfam; PF00652; Ricin B lectin; 5.
Pfam; PF00161; RIP; I.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pfam; PF00161; RIP; 1.
PRINTS; PR00396; SHIGARICIN.
PROSITE; PS00275; SHIGA_RICIN; 1.
Hydrolase; Signal; Toxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (TrEMBLrel. 19,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Similarity 38.9%
les 72; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro; IPR001574; RIP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              176 GEMRTRI 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  176 YRVRGSI 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
                                                                                                                            Hydrolase; Toxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=3677;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-DEC-2001
                                                                                                                                          NON TER
SEQUENCE
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SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                        CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                   Aatches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               82 TISVAIDVTSVYIMGYRAGDTSYFF---NEASATEAAKYVFKDAMRKVTLPYSGNYERLQ 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       118 QLAGNLRENIELGNGPLEEALSALYYYSTGGTQLPTLARSFIICIOMISEAARFOYIEGE 177
TISVAIDVTNVYIMGYRAGDTSYFF --- NEASATEAAKYVFKDSMRKITLPYSGNYERLQ 138
                         118 QLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGE 177
                                        ::| :|| || || :|-|:
25 VSFRLSGATSSSYGVFISNIR----KALPNERKLYDIPLIRSSLPGSQRYALVHLTNYADE 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9 INFTTAGATVQSYTNFIRAVRGRLTVLPN------RVGLPINQRFILVELSNHAEL 58
                                                                                                                                                                                                                                                                                                                                                         Zheng H., Wang B., Shaw P., Yeung H.; "[Cloning and DNA sequencing of the gene encoding trichosanthin]."; I Chuan Hsueh Pao 21.42-511(1994).
-!- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE
                                                                                                                                                                                                                                                                  Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots, Rosidae,
eurosids I; Cucurbitales, Cucurbitaceae, Trichosanthes.
NCBI_TaxID=3677;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            22; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                        -!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 34.4%; Score 332; DB 10; Length 289; 38.9%; Pred. No. 1.6e-23; ive 42; Mismatches 49; Indels 2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-JUL-1997 (TrEMBLrel. 04, Created)
01-JUL-1997 (TrEMBLrel. 04, Last sequence update)
01-JUL-1997 (TrEMBLrel. 22, Last annotation update)
Ribosome inactivating protein precursor (EC 3.2.2.22) (rRNA N-glycosidase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            289 AA; 31650 MW; 286AC14D48BCA175 CRC64;
                                                                                                                                                                041216 PRELIMINARY; FRT; 287 AH.
041216;
041216;
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
Trichosanthin (EC 3.2.2.22) (FRNA N-glycosidase).
                                                                                                                                                                                                                                          TRICHOSANTHIN, TCS.
Trichosanthes kirilowii (Mongolian snake-gourd)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   563 AA.
                                                                                                                                                                                                                                                                                                                                                                                                               RRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRT;
                                                                                                                                                                                                                                                                                                                                                                                                             SPECIFIC ADENOSINE ON THE 28S
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Interpro; IPN001574; RIP.
PERM; PRO0161; RIP; 1.
PRINTS; PR00396; SHIGARICIN.
PROSITE; PS00275; SHIGA_RICIN; 1.
                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
MEDLINE=94271613; PubMed=8003348;
                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; S70176; AAB31048.1; -.
HSSP; P09989; 1MRJ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity 38.9%
nes 72; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           178 MRTRI 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    194 IGKRV 198
                                                                            178 MRTRI 182
                                                                                                  194 IGKRV 198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Hydrolase; Toxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
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                                                                                                                                          RESULT 7
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56 AELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAI -- THLFIDVQNRYIFAFGGNY 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                114 DRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQY 173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22
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                                                                                                                                                                                                                                                                                                                                  derived from a truncated type 2 ribosome-inactivating protein.";
Plant J. 12:1251-126(1997).
-!-CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE
SPECIFIC ADENOSINE ON THE 28S RRNA.
-!-SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
BENDL; U76524; AACIS686.1; --
HSSP; P02879; 2AAI.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Phan Van Chi, Nguyen Thuy Ha, Le Tran Binh; "Genomic DNA Clone for mature typ-1 ribosome-inactivating protein from "Trichosanthes sp. sample UB Bac Kan 8-98 Vien CNSH (Hanoi)."; Submitted (FEB-2000) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  6 YPIINFTTAGATVQSYTNFIRAVR-----GRLTVLPNRVGLPINQRFILVELSNH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               28 YPSVSFNIAGAKSATYRDFLKNIRTIVATGTYEVNGLPVIRRESEVQVKNRFVLVLLTNY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Trichosanthes sp. Bac Kan 8-98.
Eukaryota, Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Cucurbitales; Cucurbitaceae; Trichosanthes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 25 POTENTIAL.
26 297 RIBOSOME INACTIVATING PROTEIN, A CHAIN.
298 563 RIBOSOME INACTIVATING PROTEIN, B CHAIN.
563 AA; 62336 MW; 3ED2BGC08E796205 CRC64;
                         Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta, Pepematophyta, Magnoliophyta, eudicotyledons, core eudicots, Asteridae, campanulids, Dipsacales, Adoxaceae, Sambucus. NCBI_TAXID=4202;
                                                                                                                                                                                                                                                                                                     "The major elderberry (Sambucus nigra) fruit protein is a lectin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 10; Length 563;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (Fragment).
                                                                                                                                                                                                                                           Van Damme E.J., Roy S., Barre A., Rouge P., Van Leuven F.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        51; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-OCT-2000 (TrEMBLrel. 15, Created)
01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
Trichobakin (EC 3.2.2.2) (TRNA N-glycosidase) (Frac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          34.1%; Score 329.5; DB 40.5%; Pred. No. 7e-23; ative 37; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         247 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRINTS; PR00396; SHIGARICIN.
SMART; SM00458; RICIN; 2.
PROSITE; PS50231; RICIN B LECTIN; 2.
PROSITE; PS00275; SHIGA RICIN; 1.
Hydrolase; Signal; Toxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro; IPR000772; Ricin B lectin.
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                                                                                                                                                                                                              MEDLINE=98112023; PubMed=9450339;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pfam; PF00652; Ricin B lectin; 6. Pfam; PF00161; RIP; 1.
Sambucus nigra (European elder).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           77; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       InterPro; IPR001574; RIP.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     195 IEQEVRRSLQ 204
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
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'n

564 AA; 62694 MW; 8261681A6DB55CB8 CRC64;

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SEQUENCE
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                                                    Matches
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                                                                                                                                                                                                                                                                                                62 LALDVINAYVVGYRAGNSAYFFHPDNQEDA-EAITHLFTDVQNRYTFAFGGNYDRLEQLA 120
                                                                                                                                                                                                                                                                                                                                  121 GNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRT 180
                                                                                                                                                                                                                               19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Girbes T., iglesias R., Perez Y., Ferreras J.M., Citores L.; "Molecular cloning of ebulin l."; Submitted (APR-2000) to the EMBL/GDBJ databases.
-!- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE
-i- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE SPECIFIC ADENOSINE ON THE 28S RRNA.
-i- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
EMBI, AB039324; BAA92530.1; -.
HSSP; P09989; 1MRJ.
                                                                                                                                                                                                                               9 INFTTAGATVQSYTNFIRAVR-----GRLTVLP-NRVGLPINQRFILVELSNHAELSVT
                                                                                                                                                                                                                                              2 VSFRLSGATSSSYGVFISNLRKALPYERKLYDIPLLRSTLPGSQRYALIHLTNYADETIS
                                                                                                                                                                                                       16; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SPECIFIC ADENOSINE ON THE 288 RRNA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
EMBL; AJ400822; CAC33178.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta, Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots, Asteridae, campanulids, Dipsacales, Adoxaceae, Sambucus.
                                                                                                                                                                              33.8%; Score 326; DB 10; Length 247; 39.6%; Pred. No. 4.9e-23; tive 44; Mismatches 50; Indels 16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-JUN-2001 (TrEMBLrel. 17, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Ribosome-inactivating protein precursor (EC 3.2.2.22) (rRNA
                                                                                                                                                     27199 MW; 89811AC32892F03F CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             POTENTIAL.
EBULIN L A-CHAIN.
EBULIN L B-CHAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         564 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro; IPR00172; Ricin_B_lectin.
InterPro; IPR00172; Ricin_B_lectin.
InterPro; IPR011574; RIP.
Pfam; PF001652; Ricin_B_lectin; 6.
Pfam; PF00161; RIP; I.
PRINTS; PR00396; SHIGARICIN.
SMART; SM00458; RICIN; 2.
PROSITE; PS50231; RICIN 2.
PROSITE; PS00275; SHIGA_RICIN; 1.
Glycosidase; Hydrolase; Signal; Toxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-JUN-2001 (TrEMBLrel. 17, Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                                                                                        PRINTS; PR00396; SHIGARICIN.
PROSITE; PS00275; SHIGA_RICIN; 1.
                                                               InterPro; IPR001574; RIP.
Pfam; PF00161; RIP; 1.
                                                                                                                                                                                          Best Local Similarity 39.69
Matches 72; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRELIMINARY;
                                                                                                                                          247
                                                                                                                                                      247 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HSSP; P02879; 2AAI.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=28503;
                                                                                                                 Hydrolase; Toxin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sambucus ebulus.
                                                                                                                                        247
                                                                                                                                                                                                                                                                                                                                                                                                          174 RV 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N-glycosidase).
EBU1.
                                                                                                                                                                                                                                                                                                                                                                                   181 RI 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   rissum=reaf;
                                                                                                                                                      SEQUENCE
                                                                                                                                                                               Query Match
                                                                                                                               NON TER
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                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 10
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 RESIEVGIDVINAYVVAYRAGSQSYFL---RDAPASASTYLFPGTQ-RYSLRFDGSYGDL 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       56 AELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAI -- THLFTDVQNRYTFAFGGNY 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   114 DRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQY 173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        142 DNLETAAGTRRESIELGPNPLDGAITSLWY--DGG-----VARSLLVLIQWVPEAARFRY 194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5 QYPIINFTTAGATVQSYTNFIRAVRGRLT-----VLPNRVGLPINQRFILVELSNHA 56
                                                                                                                                                                                                                                                  6 YPIINFTTAGATVQSYTNFIRAVRGR-----LTVLPNRVGLPINQRFILVELSNH 55
                                                                                                                                                                                                                                                                                                                            28 YPSVSFNLAGAKSTTYRDFLKNLRDRVATGTYEVNGLPVLRRESEVQVKNRFVLVRLTNY 87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequenting; Conservation:

J. Mol. Biol. 229:523-267 (1993).

-!- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE SPECIFIC ADENOSIDE ON THE 28S RRNA.

-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY. EMBL; M98346; AAA32626.1; -- THE RIBOSOME-INACTIVATING PROTEIN FAMILY. EMBL; M98346; AAA32626.1; -- THE RIBOSOME-INACTIVATING PROTEIN FAMILY. INTERPRO; IPRO01574; Ricin B lectin.

Interpro; IPRO01574; RIP. Blectin, 6. Ffam; PPO00652; Ricin B lectin, 6. Ffam; PPO0161; RIP; I. FRINTS; PRO0396; SHIGARICIN.

SMART; SMO396; RICIN; 2. FRINTS; 2. FR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 ODQVIKETTEGATSOSYKQFIEALRORLTGGLIHDIPVLPDPTTVEERNRYITVELSNSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-NOV-1996 (TrEMBLrel. 01, Created)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-NOV-1996 (TrEMBLrel. 23, Last annotation update)
01-NOV-1996 (TrEMBLrel. 23, Last annotation update)
01-NOV-1996 (TrEMBLrel. 23, Last annotation update)
Abrin-d (EC 3.2.2.22) (rRNA N-glycosidase) (Fragment).
Abrus precatorius (Indian licorice) (Crab's eye).
Eukaryots, Viridiplantae, Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Fabales; Fabaceae; Papilionoideae; Abreae; Abrus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ch 33.0%; Score 318.5; DB 10; Length 528;
1 Similarity 43.3%; Pred. No. 7.2e-22;
81; Conservative 22; Mismatches 69; Indels 15; Gaps
                                                                                                                                  25; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=93132798; PubMed=8421313;
Hung C.-H., Lee M.-C., Lee T.-C., Lin J.-Y.;
"Primary structure of three distinct isoabrins determined by cDNA
33.5%; Score 323.5; DB 10; Length 564; 40.0%; Pred. No. 2.6e-22; ive 38; Mismatches 51; Indels 25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                528 AA; 58870 MW; 62ED42FB8FFE60F8 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sequencing: conservation and significance.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   528 AA.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRT;
                                                                                                                                  76; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         174 IEGEMRTRIR 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               195 İBQEVRRSLQ 204
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                  Query Match
Best Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121 GNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRT 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEG 176
            9 INFITAGATVQSYTNFIRAVRGRLTVLPNRVGLPI-----NQRFILVELSNHAELSVT 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        25 VSFRLSGATSSSYGVFISNIRKALPYEKKLYDIPLIRSSLSGSQRYALIYLTNYADETIS 84
                                                                                                                                                                                                                                                                                     Yuan H., Wang L., Wang Y., Liu T., An C., Chen Z.;
"Trichosanthes kirilowii trichosanthin precursor (TCS) gene.";
submitted (WAR-2002) to the EMBL/GenBank/DDBJ databases.
-!- CATALYTIC ACTIVITY: ENDHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE
SPECIFIC ADENOSINE ON THE 28S RRNA.
                                                                                                                                                                                                                     Bukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots, Rosidae,
eurosids I; Chourbitales, Cucurbitaceae, Trichosanthes.
NCBI_TaxID=3677;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     16; Gaps
                                                                                                                                                                                                                                                                                                                                           -!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY. EMBL; AX082348; AAM22782.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               32.8%; Score 317; DB 10; Length 270;
                                                                                                                                        01-0CT-2002 (TrEMBLrel. 22, Created)
01-0CT-2002 (TrEMBLrel. 22, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Trichosanthin precursor (EC 3.2.2.22) (rRNA N-glycosidase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 31,,
Pred. No. 4e-22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Last sequence update)
Last annotation update)
(EC 3.2.2.22) (Fragment).
                                                                                                                                                                                                                                                                                                                                                                                                                                              270
29683 MW; 531713B754F9B769 CRC64;
                                                                                                                                                                                                           Trichosanthes kirilowii (Mongolian snake-gourd)
                                                                                                                       270 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     45; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                     TRICHOSANTHIN.
                                                                                                                                                                                                                                                                                                                                                                                                                          POTENTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                                                                                                                     PRT;
                                                                                                                                                                                                                                                                                                                                                                                       PRINTS; PR00396; SHIGARICIN.
PROSITE; PS00275; SHIGA_RICIN; 1.
Hydrolase; Signal; Toxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Abrin-E (RRNA N-glycosidase)
RIP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-NOV-1998 (TrEMBLrel. 08, 01-NOV-1998 (TrEMBLrel. 08, 01-DEC-2001 (TrEMBLrel. 19,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           36.8%;
                                                                                                                                                                                                                                                                                                                                                                  InterPro; IPR001574; RIP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     67; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRELIMINARY;
                                                                                                                       PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                            23 >270
                                           177 EMRTRIR 183
                                                                                                                                                                                                                                                                                                                                                                              Pfam; PF00161; RIP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         270 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity
                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                174 RVGVSIR
                                                                                                                                                                                                                                                                                                                                                                                                                                               270
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                                                                                                                                                                                        (Fragment).
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SEQUENCE
117
                      117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                 08LPV7;
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                                                                                                                     Q8LPV7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
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                                                                                               RESULT 12
                                                                                                          Q8LPV7
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121
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122 HQTREQISLGLQALTHAIS---FLRSGASNDEEKARTLIVIIQMASEAARYRYISNRVGV 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 09
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6 IKFSTEGATSQSYKQFIEALRERLRGGLIHDIPVLRDPTTVEERNRYITVELSNSERESI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 TLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Fabales; Fabaceae; Papilionoideae; Abreae; Abrus.
NCBL_TaxID=3816;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -!- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT O SPECIFIC ADENOSINE ON THE 28S RRWA.
-!- SUBUNIT: DISULFIDE-LINKED DIMEN OF A AND B CHAINS.
-!- DOMAIN: THE B CHAIN IS COMPOSED OF TWO DOMAINS, EACH DOWAIN CONSISTS OF 3 HOWOLOGOUS SUBDOMAINS (ALPHA, BETA, GAMMA).
-!- SIMILARITY: TO OTHER BACTERIAL AND PLANTS RIBOSOME-INACTIVATING PROTEINS: BELONGS TO TYPE 2 RIP.

EMBL; X54872; CAA38654.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sambucus nigra (European elder).
Bukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots,
Asteridae, campanulids, Dipsacales, Adoxaceae, Sambucus.
                                                                                                                                                                                                                                                                                                                                                      J. Biol. Chem. 266:6848-6852(1991).
-!- FUNCTION: THE A CHAIN IS RESPONSIBLE FOR INHIBITING PROTEIN SYNTHESIS THROUGH THE CATALYTIC INACTIVATION OF 60S RIBOSOMAL SUBUNITS BY REMOVING ADENINE FROM POSITION 4,324 OF 28 S RNNA. ABRIN-A IS MORE TOXIC THAN RICIN.
-!- FUNCTION: THE B CHAIN IS A GALACIOSB-SPECIFIC LECTIN THAT PACILITATES THE BINDING OF ABRIN TO THE CELL MEMBERANE THAT
                                                                                                                                                                                                                                                                       Evensen G., Mathiesen A., Sundan A., \, "Direct molecular cloning and expression of two distinct abrin A-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     67; Indels 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 10; Length 252;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                252 252
252 AA; 28309 MW; BBFC846B9E92B5DE CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Ribosome_inactivating protein (EC 3.2.2.22) (TRNA
Abrus precatorius (Indian licorice) (Crab's eye)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         32.2%; Score 310.5; DB 1
43.2%; Pred. No. 1.5e-21;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRT;
                                                                                                                                                                                                                                       MEDLINE=91201329; PubMed=2016300;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro; IPR001574; RIP. Pfam; PF00161; RIP; 1.
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                                                                                                                                                                              SEQUENCE FROM N.A.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   88 NGNIVILAVDVINLYVVAFSGNANSYFF----KDAIEVOKSNLFVGTKON-TLSFIGNY 141
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 6 YPIINFTTAGATVQSYTNFIRAVR------GRLTVLPNRVGLPINQRFILVELSNH 55
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"Characterization and molecular cloning of Nigrin 1, a type two
"Characterization and molecular cloning of Nigrin 1, a type two
ribosome-inactivating protein from leaves of elder (Sambucus nigra).";
Submitted (MAR-2000) to the EMBL/GenBank/DDBJ databases.
EMBL; AF249280; AAN86130.1; -.
Hydrolase; Glycosidase.
SEQUENCE 563 AA; 62173 MW; OEB236421FC5E04F CRC64;
                                                                                                                                                                                             proteins from Sambucus nigra leaves.;
Submitted (AUG-2001) to the EMBL/GenBank/DDBJ databases.
-!- CATALYTIC ACTIVITY: EMDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE SPECIFIC ADENOSINE ON THE 28S RRNA.
-!- SIMILARLYTS: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
EMBL; AF409135; AAL0423.1;
InterPro; IPR000772; Rich Blectin.
InterPro; IPR001574; RICh Blectin.
Pfam: PF00652; Rich Blectin; 6.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ouery Match 31.9%; Score 307.5; DB 10; Length 563; Best Local Similarity 38.4%; Pred. No. 8.9e-21; Matches 73; Conservative 36; Mismatches 56; Indels 25; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sambucus nigra (European elder).
Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta, Spermatophyta, Magnoliophyta, eudicotyledons; core eudicots; Asteridae, campanulids; Dipsacales; Adoxaceae; Sambucus.
                                                                                                                                                                    "Characterization and cloning of lectins and ribosome-inactivating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 10; Length 563;
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01-MAR-2003 (TrEMBLrel. 23, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Type 2 ribosome-inactivating protein nigrin 1 precursor (BC 3.2.2.22).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hydrolase; Toxin. -
SEQUENCE 563 AA; 62242 MW; 07F7CBEDCF33BF10 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             563 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRINTS; PR00396; SHIGARICIN.
SMART; SM00458; RICIN; 2.
PROSTIE; PS50215; RICIN B LECTIN; 2.
PROSTIE; PS00275; SHIGA_RICIN; 1.
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                                                                                                       rissue=Leaf
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Best Local 9
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Q8GT32
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142 DNLETAANTRRESIELGPSPLDGAITSLYHGD-----SVARSLLVVIQMVSEAARFRY 194
                                                                                                                                                    114 DRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQY 173
                                      28 YPSVSFNLDGAKSATYRDFLSNLRKTVATGTYEVNGLPVLRRESEVQVKSRFVLVPLTNY 87
6 YPIINFTTAGATVQSYTNFIRAVR------GRLTVLPNRVGLPINQRFILVELSNH 55
                                                                                                                     56 AELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAI - - THLFTDVQNRYTFAFGGNY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 completed: February 10, 2004, 16:26:38
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February 10, 2004, 16:13:20; Search time 31.5419 Seconds (without alignments) 930.966 Million cell updates/sec
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GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
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Maximum Match 100%
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Gapop 10.0', Gapext 0.5
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Maximum DB seq length: 2000000000
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Perfect score:
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

| | Description | A u | Ricin A-chain (RTA | Ricin A-chain ribo | Ricin A-chain RIP. | Ricin A. Escheric | Sequence of Ricinu | Ricin A encoded by | Anti-cataract immu | Ricin D. Ricinus |
|-----------|--------------------|----------|--------------------|--------------------|--------------------|-------------------|--------------------|--------------------|--------------------|------------------|
| SUMMARIES | ΩI | AAR37290 | AAR63902 | AAW25136 | 18 AAW21699 | AAP70097 | AAP70838 | AAP95639 | AAR70827 | AAP90079 |
| | DB | 14 | 16 | 18 | 18 | 8 | 60 | 10 | 16 | 10 |
| | Watch Length DB ID | 267 | 267 | 290 | 290 | 332 | 332 | 332 | 554 | 562 |
| * | Match | 98.3 | 98.3 | 98.3 | 98.3 | 98.3 | 98.3 | 98.3 | 98.3 | 98 |
| | Score | 934.5 | 934.5 | 934.5 | 934.5 | 934.5 | 934.5 | 934.5 | 934.5 | 934.5 |
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| 6 AAP50166 22 AAG78300 22 AAG78304 8 AAP70326 18 AAW25787 20 AAY55892 | 100 4 44. | 8 AAP70325 10 AAP94793 13 AAR30722 21 AAB19265 14 AAR39571 11 AAR06554 | << | 21 AAR 69048 11 AAR 07518 13 AAR 25140 18 AAR 25140 11 AAR 2514 13 AAR 2572 14 AAR 32986 15 AAR 32986 18 AAR 10468 |
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ALIGNMENTS

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Type II ribosome-inactivating protein; type II RIP; gelonin; momordin; immunoconjugate; autoimmune disease; cell killing; toxin.
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                                                                                                                                                                                                                                           Carroll SF, Lane JA,
                  AAR37290 standard; protein; 267 AA
                                                                                                                                                                                92WO-US09487.
                                                                                                                                                                                                 91US-0787567
                                                                                                                                                                                                         92US-0901707
                                                   (updated)
(updated)
(first entry)
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                                                                                     Ricin A chain.
                                                                                                                                               WO9309130-A1.
                                                  25-MAR-2003
09-JAN-2003
13-SEP-1993
                                                                                                                              Unidentified.
                                                                                                                                                                                04-NOV-1992;
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                                  AAR37290;
RESULT 1
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therapeutic agents.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (DOWC ) DOWELANCO.
                                                                                                                                                                                                 267 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          07-JUN-1995;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          26-JAN-1995;
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                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                         Query Match
                                                                                                                                                                  disease
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                                                                                                                                                                                                                                                                                                                                                                                                     121 GNYDRIEGLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 180
                                                                                                                                                                                                                                                                                                                                  48 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
                                                                                                                                                                                                                                                                                                                                                                                 108 GNYDRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
                                                                                                                                                                                                                                                                                                        1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 60
                                                                                                                                                                                                                                                                                     ----NRVGLPINQRFILV 47
                                                                The invention covers analogues of Type I RIPs. Ricin is a Type II RIPs whose A chain is howologous to plant type I RIPs. The analogues of the invention have a cysteine available for intermolecular disulphide bonding at an amino acid position corresp. to a position not naturally available for bonding; the cys residue is located in the C-terminal region of the analogue between a position corresp. to amino acid 251 and the C-terminus of ricin A chain. The analogues are pref. joined via a disulphide linkage to a molecule which specifically binds to a target cell, e.g. an antibody fragment.
(Updated on 09-JAM-2003 to correct PN field.)
                                                                                                                                                                                                                                                              Gaps
Analogues of type I ribosome inactivating protein - useful as cytocoxic agents, immuno toxins for treating auto immune diseases, cancer, graft versus host disease and selective cell killing in=vivo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Polynucleotide(s) encoding type I ribosome-inactivating proteins
                                                                                                                                                                                                                                                              13;
                                                                                                                                                                                                                                     98.3%; Score 934.5; DB 14; Length 267; 93.4%; Pred. No. 2.3e-91;
                                                                                                                                                                                                                                                              0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ricin A chain; RTA; ribosome-inactivating proteins; RIPs; cytotoxic therapeutic agents; autoimmune disease; cancer; graft-versus-host disease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Carroll SF;
                                                                                                                                                                                                                                                              0; Mismatches
                                                                                                                                                                                                                                                                                     1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT
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                                                Claim 1; Page 92; 163pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAR63902 standard; protein; 267
                                                                                                                                                                                                                                                                                                                                                                                                                               168 FQYIEGEMRTRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                     FOYIEGEMRTRIRYNRRS 198
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(first entry)
                                                                                                                                                                                                                                                                Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 1995-006804/01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ricin A-chain (RTA)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (XOMA ) XOMA CORP.
                                                                                                                                                                                                                                                   Local Similarity
                                                                                                                                                                                                                 267 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ricinus communis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           12-MAY-1994;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    24-NOV-1994
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27-JUL-1995
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                                                                                                                                                                                                                                                                185;
                                                                                                                                                                                                                  Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAR63902;
                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                Matches
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61 ELSNHAELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFIDVQNRYTFAFG 120
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Maize; proRIP; ribosome inactivating protein; alpha; beta subunit; internal linker; Barley Translation Inhibitor; Trichosanthin; Ricin A-chain; Abrin-A A-chain; Saporin; SLT-1; Luffin A; MRP; Ricinus communis agglutinin; Momordin; PAP-S; Luffin-B; Dianthin 30; therapeutic toxin; tumour cell targeted; protein synthesis inhibitor; post-translational modification; cancer; neoplasia; HIV: AIDS; human immunodeficiency virus; acquired immune deficiency syndrome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels 13; Gaps
                                                                                                                                                                AAR63902 is the ricin A chain gene product, it is analogous to the ribosome-inactivating proteins (RIPs) described in AAR6393-R63911. RIPs are the key components of cytchoxic therapeutic agents (CTAS), which include gene fusion products and immunoconjugates. CTAS may be used to selectively eliminate any cell type to which a RIP component is targetted, by the specific binding capacity of the second component of the agent. They can be used in the treatment of diseases where the elimination of a particular cell type is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        desired, such as autoimmune disease, cancer and graft-versus-host
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 934.5; DB 16; Length 267; pred. No. 2.3e-91; 0; Mismatches 0; Indels 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ricin A-chain ribosome inhibitory protein inactive precursor.
which are suitable for use as components of cytotoxic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (Updated on 25-MAR-2003 to correct PN field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAW25136 standard; Protein; 290 AA.
                                                                                                         Example 3; Fig 1; 221pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FOYIEGEMRIRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181 FOYIEGEMRIRIRYNRRS 198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 95US-0485286.
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95US-0378761.
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Matches 185; Conservative
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(first entry)
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107

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Claim 4; Column 91-94; 186pp; English.
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                                                                                                                                                                                                                                                                        AAW21699 standard; Protein; 290 AA.
                                                                                                                                                                                                                                                205 FOYIEGEMRTRIRYNRRS
                                                                                                                                                                                                                                                                                            (updated)
(first entry)
                                                                                                                                                                   Matches 185; Conservative
    Morgan AER,
              WPI; 1997-362934/33
                                                                                                                                                              Best Local Similarity
                                                                                                                                                290 AA;
                                                                                                                                                                                                                                                                                                           Ricin A-chain RIP.
                                                                                                                                                                                                                                                                                                                                             Ricinus communis.
                                                                                                                                                                                                                                                                                            25-MAR-2003
26-SEP-1997
                                                                                                                                                Sequence
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The sequences given in AAW21698-710 represent Ribosome Inactivating
Proteins (RIP's), which may be used in the construction of the
Proteins (RIP's), which may be used in the construction of the
proteins of the invention. The proRIP has a selectively removable,
internal peptide linker. The precursor sequence is incapable of
inactivating eukaryotic ribosomes, but can be converted by removal
of the linker into a protein having alpha and beta fragments and being
clamble of inactivating eukaryotic ribosomes. RIPs are potent
inhibitors of eukaryotic protein synthesis. They possess a highly
specific N-94ycosidase activity which cleaves the glycosidic bond of
specific N-94ycosidase activity which cleaves the glycosidic bond of
cellular proliferation of cells, e.g. cancer cells and HIV-infected T
cells. The inactive prokIP proteins make it possible to provide protein
synthesis inhibitors with uses in practical and improved ways not before
possible. The RIP can be used to make cytotoxic conjugates.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                48 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                85 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNOEDAEAITHLFTDVQNRYTFAFG 144
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/note= "Position of possible insertion of internal peptide linker sequence"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 18; Length 290;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Inactive precursor of maize ribosome-inactivating protein - a chimeric ribosome-inactivating protein precursors containing internal linker sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 IFPKOYPIINFTTAGATVQSYTNFIRAVRGRLT-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match 98.3%; Score 934.5; DB 1
Best Local Similarity 93.4%; Pred. No. 2.5e-91;
Matches 185; Conservative 0; Mismatches 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Claim 2; Column 91-94; 121pp; English.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                        Walsh TA;
                                                                                                                                                                                                                                                                                                    90US-0535636.
95US-0378761.
                                                                                                                                                                                                                                                                        92US-0987927.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 1997-309831/28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               290 AA;
                                                                                                                                                                                                                                                                                                                                                                                            (DOWC ) DOWELANCO.
                                                                                                                                                                                                               26-JAN-1995;
                                                                                                                                                                                                                                                                                                 11-JUN-1990;
26-JAN-1995;
                                                                                        US5635384-A.
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                                                                                                                                                                                                                                                                                                                    AAW25136 represents a Ricin A-chain ribosome inhibitory protein (RIP)
which was engineered to contain a selectively removable internal peptide
linker sequence separating the alpha and beta units of the RIP. When
separated the two units regain activity and are capable of inactivating
cukaryotic ribosomes and hence preventing protein production. Many
different RIPS may be produced with an internal linker including
maize RIP, Trichosanthin, Ricin A-chain, Abrin-A A-chain and
Saporin. The RIPs can be used in the construction of therapeutic
toxins targeted to specific cells such as tumour cells via the
attachment of a targeting polypeptide, e.g. a monoclonal antibody.
A further use is in HIV therapy (see UG4869903). There is interest
in expressing RIP recombinantly in host eukaryotic cells, because of
the capacity to provide correct post-translational processing. However,
RIPS effectively inhibit protein synthesis in eukaryotic cells resulting
in cell death. Since the inactive RIP proteins are not cytotoxic to
cukaryotic cells, they can be recombinantly expressed in such cells and
then conversed to active RIP proteins.
(Updated on 25-MAR-2003 to correct PF field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        85 BLSNHABELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          145 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 204
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   25 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -----NRVGLPINQRFILV 47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          pro-Ribosome Inactivating Protein; proRIP; peptide linker; cancer; inactivation; eukaryotic ribosome; alpha fragment; beta fragment; inhibitor; protein synthesis; N-glycosidae; glycosidae; bond; liver; rat; ribosomal 285 RNA; cellular proliferation; HIV-infected I cell.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                DNA encoding pro-ribosome inactivating proteins - inactive precursors of ribosome inactivating proteins; can be expressed in eukaryotic cells without causing cell death
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   98.3%; Score 934.5; DB 18; Length 290; 93.4%; Pred. No. 2.5e-91;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FQYIEGEMRTRIRYNRRS 185
                               Walsh TA;
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1;

0; Indels 13; Gaps

47 84

-----NRVGLPINQRFILV

09-APR-1991

SXHXB

Ricin A.

AAP70097;

us-10-083-336a-9.rag

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AAP95639
ID AAP9
XX
AC AAP9
XX
DT 25-N
DT 31-C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 7
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                                                                                                                                                                                                                                                                                                                                                156 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 215
                                                                                                                                                                                                                                                                                                                                       48 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
                                                                                                                                                                                                                                                                                                                                                                         108 GNYDRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
                                                                                                                                                                                                                                                                                                                       95
                                                                                                                                                                                                                                                                                                       47
                                                                                                                                                                                                                                                                                                                      36 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
                                                                                                                                                                                                                                                                                                     ----NRVGLPINQRFILV
                                                                                                                                                                                                                                                                                    Indels 13; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                equence of Ricinus communis castor beans ricin toxin (RT or ricin) protein encoded by pRA123.
                                                                                                                                                                              N-terminal methionine free proteins prodn. - by using host transformed with vector to express a methionine-amino-peptidase
                                                                                                                                                                                                                          Ricin A may be produced in a form which lacks an N-terminal Met
using Met-aminopeptidase from E.coli.
                                                                                                                                                                                                                                                                     Length 332;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Lectin; toxin protein; cytotoxic; cytostatic; castor bean;
                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                     DB 8;
                                                                                                                                                                                                                                                                   Ouery Match 98.3%; Score 934.5; DB Best Local Similarity 93.4%; Pred. No. 3e-91; Matches 185; Conservative 0; Mismatches
                                                                                                                                      Chang SY;
                                                                                                                                                                                                                                                                                                     1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAP70838 standard; protein; 332 AA.
                                                                                                                                      Chang S,
                                                                                                                                                                                                         Disclosure; Fig. 4; 20pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                           216 FOYIEGEMRTRIRYNRRS 233
                                                                                                                                                                                                                                                                                                                                                                                                           FQYIEGEMRTRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="Leader"
                                                                                            86US-0860330.
85US-0778414.
        Ricin A; Met-aminopeptidase.
                                                                           86EP-0307242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (updated)
(first entry)
                                                                                                                                      Bauer KA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                33..302
                                                                                                                                                      WPI; 1987-110172/16.
                                                                                                                   (CETU ) CETUS CORP.
                                                                                                                                                                                                                                                   332 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ricinus communis.
                        Escherichia coli.
                                                                                                                                                                N-PSDB; AAN70152
                                                                                                                                     Benbassat A,
                                                                                          06-MAY-1986;
                                                                                                    20-SEP-1985;
                                                                           19-SEP-1986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        25-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                18-FEB-1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    plant toxin
                                                          22-APR-1987
                                         EP219237-A
                                                                                                                                                                                                                                                    Seguence
                                                                                                                                                                                                                                                                                                                                                                                                           168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAP70838;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Region
                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAP70838
g
                                                                                                                                                                                                                                                                                                                                       à
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108 GNYDRIEQLAGNIRENIELGNGPLEBAISALYYSTGGTQLPTLARSFIICIQMISEAAR 167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                156 GNYDRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               48 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               96 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT------NRVGLPINQRFILV 47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       36 IFPKQYPIINFTTAGATVQSYTNFIRAVRGKLTTGADVRHEIPVLPNRVGLPINQRFILV 95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The full-length sequences encoding ricin A (AAN70520), ricin D (AAN70525), putative ricin E (AAN70526) and RCA (AAN70524) in precursor form were obtd. using messenger RNA to obtain a cDNA library, and then probing the library to retrieve the desired cDNA inserts. The library was probed using the 35-mer given in AAN70514. Figure 4 (see AAN70520, AAN70521, AAN70522) shows the nucleotide sequences of three sequences contg. cDNA inserts obtd. by probing a cDNA library for sequences encoding ricin B using the probe in AAN70517. The cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          inserts can be placed into expression vectors. Site-directed mutagenesis may be used to place an ATG start codon and a HindIII site at the beginning of the mature protein (see AAN70518). The coding sequences of the inserts can be ligated into expression vectors contg. the PhoA promoter-operator and leader sequence (AAN70523) and suitable retroregulators.

(Updated on 25-MAR-2003 to correct PA field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   New non-glycosylated ricin precursor and toxin etc. - are prepd. by recombinant DNA procedures with specific isolation steps for purer and soluble prods.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98.3%; Score 934.5; DB 8; Length 332; 93.4%; Pred. No. 3e-91; tive 0; Mismatches 0; Indels 13.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAP95639 standard; protein; 332 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Disclosure; Fig 1; 112pp; English.
                            315..332
/note="B-chain"
/note="A-chain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        168 FQYIEGEMRTRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            216 FQYIEGEMRTRIRYNRRS 233
                                                                                                                                                                                                                                                                         86EP-0308877
                                                                                                                                                                                                                                                                                                                                         86US-0837583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity 93.4
Matches 185; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (updated)
(updated)
                                                                                                                                                                                                                                                                                                                                                                                                      (CETU ) CETUS CORP. (CHIR ) CHIRON CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 1987-265177/38.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     332 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N-PSDB; AAN70519
                                                                                                                                                                                                                                                                         13-NOV-1986;
                                                                                                                                                                                                                                                                                                                                         07-MAR-1986;
                                                                                                                                                                                                 23-SEP-1987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             25-MAR-2003
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                                                                                                                                    EP237676-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Piatak M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAP95639;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                   Region
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Η;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      96 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  156 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Recombinant vectors expressing ricin chains or diphtheria toxin -used for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               36 IPPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          prodn. of new immunotoxin conjugates with monoclonal antibodies, having high cell specificity and good extracellular stability.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Plasmid RA123 (ATCC No. 39799) carries the entire coding sequence for ricin A, as well as codons for 12 AAs joining the A to the B chain. Following modification for ease of manipulation the plasmid was used to construct expression vectors which express the conjugates in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT------NRVGLPINQRFILV
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Greenfield L, Nitecki D, Kaplan D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 10; Length 332;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  host cells. (Updated on 31-OCT-2002 to add missing OS field.) (Updated on 25-MAR-2003 to correct PF field.) (Updated on 25-MAR-2003 to correct PR field.) (Updated on 25-MAR-2003 to correct PI field.)
                                                  Plasmid pRA123; ricin-A; ricin-B; cytotoxicity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98.3%; Score 934.5; DB 93.4%; Pred. No. 3e-91; iive 0; Mismatches
                          Ricin A encoded by insert from plasmid pRA123.
                                                                                                                                      ..35
label= leader sequence
                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Disclosure; Fig 14; 54pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Lawyer FC, Horn G,
                                                                                                                                                                                                                     315..332
/label=B-chain
                                                                                                                                                                         label=A-chain
                                                                                                                                                                                        303..314
/label=linker
                                                                                                                                                                                                                                                                                                                                          84US-0578115.
84US-0578121.
84US-0578122.
84US-0648759.
84US-0653515.
                                                                                                                                                                                                                                                                                                                   89EP-0201162.
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                CORPORATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                               36..302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 1989-286959/40.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity
Matches 185; Conserva
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  332 AA;
                                                                               Ricinus communis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N-PSDB; AAN91281
                                                                                                                                                                                                                                                                                                                                                                                                                                (CEIU ) CEIUS
13-AUG-1990
                                                                                                                                                                                                                                                                                                                                                                         09-FEB-1984;
                                                                                                                                                                                                                                                                                                                                                             08-FEB-1984;
                                                                                                                                                                                                                                                                                                                                                                                                    20-SEP-1984;
                                                                                                                                                                                                                                                                                                                   19-JAN-1989;
                                                                                                                                                                                                                                                                                                                                               08-FEB-1984;
                                                                                                                                                                                                                                                                                         04-OCT-1989
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Selfand D,
                                                                                                                                                                                                                                                               EP335476-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Piatak MJ;
                                                                                               Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           48
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                    Peptide
                                                                                                                                                               Peptide
                                                                                                                                                                                        Peptide
                                                                                                                                                                                                                   Peptide
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The immunotoxin given in AAR70827 comprises the heavy and light chain variable regions of anti-lens epithelium IgG3 MAb 4197X linked to richin-A and a hexa-histidine trag. The DNA construct encoding the immunotoxin was expressed from pHB19 in E. coli. (Updated on 25-MAR-2003 to correct PN field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                           Immunotoxin; heavy chain; light chain; variable region; antibody;
ricin-A; cytostatic; cataract; lens opacification; epithelial cell;
pHB19; 4197X; monoclonal antibody; MAb.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                New single chain immuno:toxin - binds specifically to epithelial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match

98.3%; Score 934.5; DB 16; Length 554;
Best Local Similarity 93.4%; Pred. No. 6e-91;
Matches 185; Conservative 0; Mismatches 0; Indels 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             cells, for inhibiting development of sec. cataracts after
                                                                                                                                                                                                                                                                                                                                 /label= HEAVY
/note= "MAb 4197X heavy chain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Wood MS;
                                                                                                                                                                                                                                                                                    1..27
/label= Sig_peptide
/note= "phoA signal sequence"
28..145
                                                                                                                                                                                                                                                                                                                                                                                                         'note= "MAb 419X light chain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                         /label= TAG
/note= "hexa-histidine tail"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Wallace TL,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         extra:capsular cataract extraction.
                                                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                   ¥.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (HOUS-) HOUSTON BIOTECHNOLOGY INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Disclosure; Fig.4; 69pp; English.
                                                                                   AAR70827 standard; Protein; 554
168 FQYIEGEMRTRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                                                                 'label= RICIN-A
                    216 FOYIEGEMRTRIRYNRRS 233
                                                                                                                                                                                                                                                                                                                                                                      /label= LINKER
                                                                                                                                                                                                                                                                                                                                                                                             label= LIGHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      93US-0101329.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               94WO-US07919.
                                                                                                                                  (updated)
(first entry)
                                                                                                                                                                      Anti-cataract immunotoxin.
                                                                                                                                                                                                                                                                                                                                                          148..166
                                                                                                                                                                                                                                                                                                                                                                                                                                            549..554
                                                                                                                                                                                                                                                                                                                                                                                                                       276..544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gould RM, Kelleher PJ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 1995-082036/11.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   554 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          N-PSDB; AA085386.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      02-AUG-1993;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WO9503828-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               15-JUL-1994;
                                                                                                                                  25-MAR-2003
31-AUG-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       09-FEB-1995
                                                                                                                                                                                                                                               Synthetic.
                                                                                                            AAR70827;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                            Peptide
                                                                                                                                                                                                                                                                                  Peptide
                                                                                                                                                                                                                                                                                                                                                          Peptide
                                                                                                                                                                                                                                                                                                                                                                                   Domain
                                                                                                                                                                                                                                                                                                                                                                                                                       Domain
                                                                                                                                                                                                                                                                                                                        Domain
                                                            RESULT 8
                                                                         AAR70827
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167

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96 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 155
                                                             156 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR
                                            108 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Preproxicin is the whole polypeptide encoded by AAN50202 and the DNA encoding this is claimed. Proxicin is obtained from preproxicin by removal of the AA laader sequence. The linker AA sequence which is present in the precursor polypeptide is enzymatically removed in the cell to separate the A and B chains, which are joined by a disulphide bridge during the formation of the ricin molecule itself. This linker region as well as the presumptive amino terminal leader pur signal sequence are not present in the sequences already published by Funatsu et al.
                                                                                                                                                                                                                                                                                                                                                                                                                                             the A chain and chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                or its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               New DNA sequences coding for ricin type plant toxin - mutants, and modified vectors and host microorganisms
                                                                                                                                                                                                                                                                                                                                                                                                                              292..303
/label= links the C-terminus of
the N-terminus of the B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         34..36
/label= N-linked glycosylation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   260..262
/label= N-linked glycosylation
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/label= N-linked glycosylation
                                                                                                                                                                                                                                                                                      Sequence of preproricin encoded by pRCL617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Disclosure; Page 30-30c; 40pp; English
                                                                                                                                                                                                                                                                                                                                                                       Socation/Qualifiers
                                                                                                                                                                                                 AAP50166 standard; Protein; 565 AA.
                                                                                                  FQYIEGEMRTRIRYNRRS 185
                                                                                                                             216 FOYIEGEMRTRIRYNRRS 233
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|label= signal
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                                                                                                                                                                                                                                                                                                                 Toxin; anti-tumour therapy
                                                                                                                                                                                                                                                          (first entry)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Modified-site
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    15-JUL-1983;
15-JUL-1983;
                                                                                                                                                                                                                                                           16-OCT-1991
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EP145111-A.
                                                                                                  168
                                                                                                                                                                                                                               AAP50166;
                                                                                                                                                                                                                                                                                                                                             Ricinus.
                                                                                                                                                                                                                                                                                                                                                                                                                  Protein
                                                                                                                                                                                                                                                                                                                                                                                      Peptide
                                                                                                                                                                     RESULT 10
                                                                                                                                                                                     AAP50166
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                             337
                                                                                                               167
                                                                                                                                          457
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                                                        48 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
                                                                                 338 ELSNHABLSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDABAITHLFTDVQNRYTFAFG 397
  47
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         36 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
                                                                                                                             398 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR
                          278 IFPKOYPIINFTTAGATVOSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINORFILV
                                                                                                              GNYDRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98.3%; Score 934.5; DB 10; Length 562; 93.4%; Pred. No. 6.1e-91; ive 0; Mismatches 0; Indels 13; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ricin D (see corresp. AAN90068) found on the EcoRI-HindIII fragment of DNA from Ricinu communis, Zanibariensis variety. Patent discloses many modifications of ricin in which the lectin binding function of the B chain is diminished or removed, and conjugation to toxins to eliminate cell binding. (Updated on 25-MAR-2003 to correct PA field.)
(Updated on 25-MAR-2003 to correct PI field.)
                                                                                                                                                                                                                                                                                                                                                                                                  Ricin D; Ricinus communis; caster beans; Zanibariensis variety; modified; lectin binding removed; reduced cell binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Modified ricin molecules and toxin conjugates - in which the lectin binding function of the B chain is removed or diminished to reduce cell binding.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-----
 1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-
                                                                                                                                                                                                                                                                      AAP90079 standard; protein; 562 AA.
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                                                                                                                                                                                                                                                                                                                                                                                                                                             communis (caster beans).
                                                                                                                                                                      168 FQYIEGEMRTRIRYNRRS 185
                                                                                                                                                                                                 458 FOYIEGEMRTRIRYNRRS 475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                88WO-US04238.
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                                                                                                                                                                                                                                                                                                                                            (first entry)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Local Similarity
Matches 185; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         562 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N-PSDB; AAN90068.
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                                                                                                               108
                                                                                                                                                                                                                                                                                                  AAP90079;
                                                                                                                                                                                                                                                                                                                                                                       Ricin D.
                                                                                                                                                                                                                                                                                                                                                                                                                                             Ricinus
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                                                                                                                                                                                                                                    GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
                                                                                                                                                                                                                                                                                                               145 GNYDRLEQLAGNLRENIELGNGPLREAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 204
                                                                                                                                                               25 İFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHDIPVLPNRVGLPİNQRFILV 84
                                                                                                                                    -----NRVGLPINQRFILV 47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  composition comprising toxin e.g., ricin based antiviral compound for treating viral infections such as human immunodeficiency
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /label= Ricin B_chain
/note= "Galactose/N-acetylgalactosamine-binding lectin"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Castor bean plant, preproricin, ricin; A chain, B chain, human immunodeficiency virus infection, HIV, toxin, antiviral agent, retroviral infection, anti-HIV, virucide activity, viral protease.
                                                                                            13;
                                              Score 934.5; DB 6; Length 565; Pred. No. 6.1e-91; 0; Mismatches 0; Indels 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     75..290
| Achain A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain | A chain |
                                                                                                                             1 IFPKOYPIINFTTAGATVQSYTNFIRAVRGRLT--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Castor bean preproricin protein (SEQ ID 1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /label= Signal peptide
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAG78300 standard; Protein; 565 AA.
                                                                                                                                                                                                                                                                                                                                                                        FOYIEGEMRTRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                                          205 FQYIEGEMRTRIRYNRRS 222
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                                                              93.4%;
                                                98.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  16-FEB-2000; 2000US-0182759.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15-FEB-2001; 2001WO-US05282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                   Matches 185; Conservative
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                                                                   Similarity
            565 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ricinus communis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N-PSDB; AAI64137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           virus infection,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WO200160393~A1
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          Sequence
                                                                                                                                                                                                                                                                                        108
                                                                                                                                                                                                                                                                                                                                                                      168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAG78300;
                                            Query Match
                                                                   Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Peptide
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The sequence relates to preproricin protein encoded by the DNA sequence given in An16413. The invention relates to a novel toxin (e.g., ricin) based antiviral agent which is toxic to virus-infected cells, but non-toxic to uninfected cells. The invention has anti-HIV and virucide activities. Its mechanism of action is through inactivation of cellular ribosomes and enhancement of binding of the antiviral agent to galactose residues on cell surfaces, and its cellular internalisation. The invention is useful for treating human immunodeficiency virus infection and other viral infections, especially retroviral infections. The intiviral agent is activated in viral particles or early-stage infection and other viral infection and effectively preventing the integration of the viral genome into the host genome thereby preventing the integration of the viral genome into the host genome thereby preventing and not just cells known to act as host cells for the virus integrated in it, unless the cell is infected with the virus, where the viral protease activates it.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           85 ELSNHABLSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 144
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       108 GNYDRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         25 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHDIPVLPNRVGLPINQRFILV 84
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   48 ELSNHAELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         145 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -----NRVGLPINORFILV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         98.3%; Score 934.5; DB 22; Length 565; 93.4%; Pred. No. 6.1e-91; ive 0; Mismatches 0; Indels 13; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Castor bean plant, preproricin, ricin; A chain, B chain, human immunodeficiency virus infection, HIV, toxin, antiviral agent, retroviral infection, anti-HIV, virucide, viral protease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Chimeric - Ricinus communis
Chimeric - Human immunodeficiency virus type 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Modified castor bean preproricin (SEQ ID 10).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-
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/label= Signal_peptide
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296..297
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/label= Ricin A chain
/note= "N-glycosidase"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAG78304 standard; Protein; 565 AA.
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/label= Proricin
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity 93.4
Matches 185; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         292..303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         565 AA;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Peptide
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us-10-083-336a-9.rag

Lectin; toxin protein; cytotoxic; cytostatic; castor bean; Sequence of Ricinus communis (castor bean) Ricin toxin (RT or ricin) E precursor encoded by pRT38.

(updated)
(first entry)

25-MAR-2003 21-MAY-1991 Location/Qualifiers

Ricinus communis.

plant toxin.

/note= "leader"

Region Region Region

36..302 /note=

315..576 /note= "B-chain" "A-chain"

86US-0837583. 86EP-0308877

13-NOV-1986; 07-MAR-1986;

23-SEP-1987.

EP237676-A.

(CETU) CETUS CORP. (CHIR) CHIRON CORP.

Piatak M;

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The sequence relates to the amino acid sequence of a modified preproricin protein encoded by AAI64145. The invention relates to a novel toxin (e.g. ricin) based antiviral agent which is toxic to virus-infected cells, but non-toxic to uninfected cells. The invention has anti-HIV and virucide activities. The agent is able to enter all HIV susceptible cells, and not just cells known to act as host cells for the virus. The antiviral agent remains inert in a cell unless the cell is infected with the HIV virus, where the viral protease activates it. Ricin's mechanism of action is through inactivation of cellular ribosomes and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       145 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   48 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  85 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             108 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIOMISEAAR 167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   enhancement of binding of the antiviral agent to galactose residues on cell surfaces, and its cellular internalisation. The invention is useful for treating human immunodeficiency virus infection and other viral infections, especially retroviral infections. The antiviral agent is activated in viral particles or early-stage infected cells, killing the cells upon infection and effectively preventing the integration of the viral genome into the host genome thereby preventing the latency/rebound
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ----NRVGLPINORFILV 47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         84
                                                                                                                                                                                                                                                                                                                                                                                                                                              Novel composition comprising toxin e.g., ricin based antiviral compound useful for treating viral infections such as human immunodeficiency
              304..565
/label= Ricin B_chain
/note= "Galactose/N-acetylgalactosamine-binding lectin"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       25 IFPKOYPIINFITAGAIVOSYINFIRAVRGRLITGADVRHEIPVLPNRVGLPINQRFILV
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98.3%; Score 934.5; DB 22; Length 565;
Best Local Similarity 93.4%; Pred. No. 6.1e-91;
Matches 185; Conservative 0; Mismatches 0; Indels 13;
'label= HIV_protease_cleavage_site
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Example 1; Page 59-63; 66pp; English
                                                                                                                                                                                                                                                                                          (BECH-) BECHTEL BWXT IDAHO LLC.
                                                                                                                                                                                                                                             16-FEB-2000; 2000US-0182759.
                                                                                                                                                                                                   15-FEB-2001; 2001WO-US05282
                                                                                                                                                                                                                                                                                                                                    Keener WK, Ward TE;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             565 AA;
                                                                                                                                                                                                                                                                                                                                                                                                      N-PSDB; AAI64145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             virus infection.
                                                                                                            WO200160393-A1
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1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-
                                                                                                                                                                                                                                                0; Mismatches
                                                                                                                                                          Disclosure; Fig 14(1-2); 112pp; English.
                                                                                                                                                                                                                                         98.3%;
93.4%;
                                                                                                                                                                                                                                                 Matches 185; Conservative
                                                                                                                              WPI; 1987-265177/38.
                                                                                                                                                                                                                                         Query Match
Best Local Similarity
                                                                                                                                                                                                                                 576 AA;
                                                                                                                                 N-PSDB; AAN70526
                                                                                                                                                                                                                                 Sequence
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168 205

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AAP70326;

RESULT 13 AAP70326

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The full length sequences encoding ricin A (AAN70520), ricin D (AAN70525) putative ricin B (AAN70526) and RCA (AAN70524) in precursor form were obtained, using the messenger RNA to obtain a cDNA library, and then probing the library to retrieve the desired cDNA inserts. The library was probed using the 35-mer given in AAN70514. Figure 4 (see AAN70520, AAN70521, AAN70521, AAN70520, AAN70521, AAN70521, AAN70521, AAN70521, AAN70521, AAN70521, AAN70520, AAN70521, AAN70521, AAN70521, AAN70521, AAN70521, AAN70521, AAN70521, AAN70521, AAN70521, AAN70521, AAN70521, AAN70521, AAN70521, AAN70521, AAN705231, AAN705231, AAN705231, AAN705231, AAN705231, AAN705231, AAN705231, AAN705231, AAN705231, AAN705231, AAN705231, AAN705231, CORIECT PA FIELD.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     36 IFPKOYPIINFTTAGATVOSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINORFILV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0; Indels 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 576;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8;
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Pred. No. 6.3e-91;
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156 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 215
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DNA (see AAT91638) encoding the enzymatic A domain and a portion
of the A-to-B linker peptide of ricin was used to construct a
ricin-diphtheria toxin B'-interleukin-2 gene that was expressed in
E. coli. The hybrid protein can be isolated and used to treat
conditions involving over-production of cells bearing IL2 receptors,
such as certain T-cell lymphomes ribosomes in calls bearing IL2 receptors,
crises. The hybrid inactivates ribosomes in calls bearing IL2
receptors, resulting in cessation of protein synthesis and death of
tearget cells. Claimed hybrid proteins comprise a translocation
domain and a cell binding domain from e.g. a hormone, growth factor
or polypeptide toxin. The hybrid molecules can be used for the
                                                                                                                                                                                                                                                                                                                                                                               Ricin, cytotoxin, hybrid protein; cell delivery; cell binding ligand; translocation domain; diphtheria toxin B'; interleukin-2; T-cell lymphoma; organ rejection; therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   New hybrid molecules for delivery of agents to cells - comprise binding domain of a cell binding ligand and a portion of a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1..35
/label= Sig_peptide
36..302
/label= A-domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Example 4; Fig 11A-B; 30pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                       AAW25787 standard; Protein; 576 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                translocation domain of a protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  315..576
/label= B-domain
                                        168 FOYIEGEMRTRIRYNRRS 185
                                                                                216 FOYIEGEMRIRIRYNRRS 233
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|abel= Linker
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85US-0726808.
85US-0742554.
89US-0456095.
90US-0538276.
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N-PSDB; AAT91638.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (SERA-) SERAGEN INC.
                                                                                                                                                                                                                                                                                                                                         Castorbean ricin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ricinus communis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    04-AUG-1993;
                                                                                                                                                                                                                                                                            25-MAR-2003
27-MAR-1998
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Murphy JR;
                                                                                                                                                                                                                                    AAW25787;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Peptide
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                                                                                                                                               RESULT 14
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107
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            96 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               108 GNYDRIEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR
                                                                                                                                                                                                                                                                                                                                                                                                    -----NRVGLPINORFILV
                                                                                                                                                                                                                                                                                                                                                                                                                                                   36 IFPKOYPIINFTTAGATVOSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
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                                                                                                                                                                                                                                                                                                                                                     13; Gaps
delivery of agents (e.g. therapeutic genes, toxins, detectable labels) into cells. The use of a translocation mechanism ensures that the hybrid will be effective in relatively low doses, since a high proportion of the substance of interest will be taken into the targeted cells. The hybrid molecules can be manufactured as a single hybrid recombinant protein, permitting reproducibility, consistency, and the precise control of composition. (Updated on 25-WAR-2003 to correct PF field.)
                                                                                                                                                                                                                                                                                                   DB 18; Length 576;
                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                           Score 934.5; DB 18;
Pred. No. 6.3e-91;
0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                 1 IFPKOYPIINFTTAGATVQSYTNFIRAVRGRLT-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAY55892 standard; Protein; 576 AA.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       216 FOYIEGEMRTRIRYNRRS 233
                                                                                                                                                                                                                                                                                             98.3%;
93.4%;
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91US-0722484.
85US-0726808.
85US-0742554.
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                                                                                                                                                                                                                                                                                                                                               Matches 185; Conservative
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N-PSDB; AAZ30663.
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                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                           576 AA;
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                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                      Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 15
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Example 4; Fig 11; 31pp; English.

The invention relates to a recombinant DNA molecule encoding a hybrid protein comprising three parts: (a) the first part comprises a portion of the binding domain of a cell-binding polypeptide ligand allowing the hybrid protein to bind to an animal cell; (b) the second part comprises a portion of a translocation domain of a naturally occurring protein coxin, british, botulinum neutoxin, ricin, cholera coxin, which translocate the third part of the across the cytoplasmic communication to the cytosol of the cell; which is non-native coxin, which translocate the third part of the across the cytoplasmic membrane into the cytosol of the cell; which is non-native communication of appropriate entity to be introduced into the cell, which is non-native captor bean ricin toxin sequence for use in generating the hybrid of the cinvention. The hybrid molecule enables the direction of appropriate corrupt cells, allowing them to function properly and alleviate or cure the disease. The hybrid is especially used in treating genetic deficiency diseases, by delivering to affected cells an enzyme cor soarce precursor or coffector, odirecting to a particular enzyme or a scarce precursor or coffector, coincer cell, or virus infected-cells), to counteracting viral infections such as correct precursor or viral proteins. It is also involved in the process of getting non-therapettic substances such as

576 AA; Sequence

0; Indels 13; Gaps 98.3%; Score 934.5; DB 20; Length 576; 93.4%; Pred. No. 6.3e-91; Live 0; Mismatches 0; Indels 13; Matches 185; Conservative Best Local Similarity Query Match

48 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107 1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-------NRVGLPINORFILV 47 36 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 95 à à

ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 155 108 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167 96 Dp ð dd

FOYIEGEMRTRIRYNRRS 185 168

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216 FOYIEGEMRTRIRYNRRS 233

Search completed: February 10, 2004, 16:22:28 Job time : 31.5419 secs

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                                                                         February 10, 2004, 16:18:30; Search time 10.6968 Seconds (without alignments) 731.761 Million cell updates/sec
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                                                                                                                                                     1 IFPKQYPIINFTTAGATVQS......ARFQYIEGEMRTRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 1,
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Patent No.
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2: /cgn2 6/ptodata/l/iaa/5B COMB.pep:*
3: /cgn2 6/ptodata/l/iaa/6A COMB.pep:*
4: /cgn2 6/ptodata/l/iaa/6B COMB.pep:*
5: /cgn2 6/ptodata/l/iaa/PCTUS COMB.pep:*
6: /cgn2 6/ptodata/l/iaa/PCTUS COMB.pep:*
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-07-901-707-1
US-08-430-1
US-08-488-138-1
US-08-488-138-1
US-08-47-4848-1
US-08-646-360-1
US-08-646-360-1
US-09-136-389-1
US-09-610-6938-1
US-09-610-6938-1
US-08-378-7618-8
US-08-378-7618-8
US-08-378-7618-27
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US-08-318-303-16
US-08-338-793D-61
US-09-378-773-1
US-08-378-777-
US-08-477-484-13-6
US-08-477-484-6
US-08-477-4848-6
US-08-477-4848-6
US-08-477-4848-6
US-08-436-6
US-09-136-38-6
                                                                                                                                                                                                                                             Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-08-378-761A-74
                                                                                                                                                                                                                     328717 seqs, 42310858 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SUMMARIES
                                                                                                                                                                                                                                                                                                          Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                  - protein search, using sw model
                                                                                                                                                                                            Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                Issued Patents AA:*
                                                                                                                                                                                                                                                                       Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                              US-10-083-336A-9
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Match Length DB
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                                                                                                                                                                                                                      Searched:
                                                                            Run on:
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| Sequence 74, Appl | Seguence 4, Appli | 4 | Sequence 4, Appli | Sequence 4, Appli | Sequence 4, Appli | 4 | 9 | 9 | | Sequence 6, Appli | Sequence 15, Appl | 7, 1 | Sequence 2, Appli | Sequence 2, Appli | Sequence 15, Appl | 71, | 71, |
|-------------------|-------------------|-----------------|-------------------|-------------------|-------------------|------------------|-----------------|-----------------|-----------------|-------------------|-------------------|-----------------|-------------------|-------------------|-------------------|-------------------|------------------|
| US-08-485-286-74 | US-07-923-692C-4 | US-08-184-237-4 | US-08-482-920-4 | US-08-484-341-4 | US-08-483-502-4 | US-09-726-651A-4 | US-07-901-707-6 | US-07-988-430-6 | US-08-425-336-6 | PCT-US92-09487-6 | US-08-324-301-15 | US-08-902-486-7 | US-08-245-754A-2 | US-08-597-731-2 | US-08-902-486-15 | US-08-378-761A-71 | US-08-485-286-71 |
| Н | -4 | Н | N | m | m | 4 | Н | 1 | ~ | Ŋ | Н | ų | - | 71 | m | Н | 1 |
| 267 | 289 | 289 | 289 | 289 | 289 | 289 | 255 | 255 | 255 | 255 | 282 | 248 | 290 | 290 | 496 | 250 | 250 |
| 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 32.8 | 32.8 | 32.8 | 32.8 | 32.8 | 31.6 | 31.6 | 31.6 | 31.6 | 30.6 | 30.6 |
| 337.5 | 337.5 | 337.5 | 337.5 | 337.5 | 337.5 | 337.5 | 312 | 312 | 312 | 312 | 312 | 300.5 | 300.5 | 300.5 | 300.5 | 291 | 291 |
| 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
| | | | | | | | | | | | | | | | | | |

ALIGNMENTS

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APPLICANT: Better, Marc D.
APPLICANT: Better, Marc D.
APPLICANT: Carroll, Steve F.
APPLICANT: Lane, Julie A.
TITLE OF INVENTION: Underzials Comprising and Methods of
TITLE OF INVENTION: Composition and Use for Ribosome-Inactivating Proteins
NUMBER OF SEQUENCES: 57
CORRESPONDENCE ADDRESS:
ADDRESSEE: Marshall, O'Toole, Gerstein, Murray &
ADDRESSEE: Bicknell
                                                                                                                                                                                                                                                                                                                                                                       STREET: Two First National Plaza, 20 South Clark STREET: Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/901,707
FILING DATE: 19920619
CLASSIFTCATION: 435
PRIOR APPLICATION DATA:
PRIOR APPLICATION DATA:
PRIOR APPLICATION DATA:
FILING DATE: 04-NOV-1991
ATTORNEY/AGENT INFORMATION:
NAME: NO. 5376546and, Greta E.
REGISTRATION NUMBER: 35,302
REFERENCE/DOCKET NUMBER: 27129/30910
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION:
TELECOMMUNICATION INFORMATION:
TELERANX: (312) 984-5750
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                         Sequence 1, Application US/07901707
Patent No. 5376546
GENERAL INFORMATION:
                                                                                                     APPLICANT: Bernhard, Susan L. APPLICANT: Better, Marc D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELEX: 25-3856
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  : 267 amino acids
AMINO ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                             CITY: Chicago
STATE: Illinois
COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60603
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TOPOLOGY:
US-07-901-707-1
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Length 267;

DB 1;

98.3%; Score 934.5;

Query Match

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APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Lane, Julie A.
APPLICANT: Lei, Shau-Ping
TITLE OF INVENTION: Materials Comprising and Methods of
TITLE OF INVENTION: Preparation and Use for Ribosome-Inactivating Proteins
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                           61 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 120
                                                                                                                                                                                                                                                        108 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
                                                                                                                                                                                                                                                                                   48 ELSNHAELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
                                                                                                             1 IFPKOYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINORFILV 60
                                                                    1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-------NRVGLPINQRFILV 47
                     Indels 13; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADDRESSEE: Marshall, O'Toole, Gerstein, Murray & ADDRESSEE: Bicknell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STREET: Two First National Plaza, 20 South Clark STREET: Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: Patentin Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/988,430
FILING DATE: 19921209
                          .
93.4%; Pred. No. 1.1e-101;
                          0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CLASSIFFCATION: 7,212.5
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/901,707
FILING DATE: 19-UIN-1992
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: US 07/787,567
FILING DATE: 04-NOV-1991
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME: No. 5416202and, Greta E. REGISTRATION VONBER: 35302 REFERENCE/DOCKET NUMBER: 31133 TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 1, Application US/07988430 Patent No. 5416202
                                                                                                                                                                                                                                                                                                                                              168 FQYIEGEMRTRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                              181 FOYIEGEMRIRIRYNRRS 198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (312) 346-5750
(312) 984-9740
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INFORMATION FOR SEQ ID NO: 1: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH: 267 amino acids TYPE: AMINO ACID
                          Matches 185; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CITY: Chicago
STATE: Illinois
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-07-988-430-1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 2
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121 GNYDRLEQLAGNLRENTELGNGPLEBAISALYYYSTGGTQLPTLARSFIICIQMISBAAR 180
                                                                                                                                                                                                         48 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEALTHLFTDVQNRYTFAFG 107
                                                                                                                                                                                                                                                       61 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 120
                                                                                                                                                                                                                                                                                                             108 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
                                                                                                       1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-------NRVGLPINQRFILV 47
                                                                                                                                                  1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRL/TGADVRHBIPVLPNRVGLPINQRFILV 60
                                                   0; Indels 13; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Studnika, Gary M.
TITLE OF INVENTION: Immunotoxins Comprising Ribsome-Inactivating
TITLE OF INVENTION: Proteins
NUMBER OF SEQUENCES: 1400
Query Match 98.3%; Score 934.5; DB 1; Length 267; Best Local Similarity 93.4%; Pred. No. 1.1e-101; Matches 185; Conservative 0; Mismatches 0; Indels 13.
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ADDRESSEE: Marshall, O'Toole, Gerstein, Murray & Borun STREET: 6300 Sears Tower, 233 South Wacker Drive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURENT APPLICATION DATA:
APPLICATION NUMBER: US/08/425,336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FILING DATE: 18-APR-1995
CLASSIFICATION: 530
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/064,691
FILING DATE: 12-MAY-1993
APPLICATION NUMBER: US 07/901,707
FILING DATE: 19-UJN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/787,567
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18-APR-1995
18-APR-1995
18: 530
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TELECOMMUNICATION INFORMATION:
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INFORMATION FOR SEQ ID NO: 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COUNTRY: USA
ZIP: 60606-6402
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILING DATE: 04-NOV-1991
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             312/474-6300
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TELEFAX:
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121 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICTQMISEAAR 180
                                                                                                                                                                                             ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
                                                                                                                                                                                                                                                    61 BLSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 120
                                                                                                                                                                                                                                                                                                           GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
                                                                                         --NRVGLPINQRFILV 47
                                                                                                                                       1 IFPKOYPIINFTTAGATVOSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 60
                                  0; Indels 13; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Carroll, Stephen F.
TILE OF INVENTION: Immunotoxins Comprising Ribosome-Inactivating
TITLE OF INVENTION: Proteins
NUMBER OF SEQUENCES: 169
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER: IBM PC compatible
COMPUTER: IBM PC compatible
COMPUTER: IBM PC compatible
COMPRATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/488,113B
FILING DATE: 07-JUN-1995
CLASSIFICATION: 530
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/425,336
FILING DATE: 18-APR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/064,691
FILING DATE: 12-MAY-1993
PRIOR APPLICATION DATA:
APPLICATION DATA:
APPLICATION DATA:
APPLICATION DATA:
APPLICATION NUMBER: US 07/901,707
FILING DATE: 19-JUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/901,707
FILING DATE: 19-JUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/901,707
FILING DATE: US 07/787,567
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     93.4%; Pred. No. 1.1e-101; cive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      E: McAndrews, Held & Malloy, Ltd.
500 West Madison Street, 34th floor
                                                                                   1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 1, Application US/08488113B Patent No. 5744580
                                                                                                                                                                                                                                                                                                                                                                                                                     168 FOYIEGEMRIRIRYNRRS 185
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE/DOCKET NUMBER: 11
TELECOMMUNICATION INFORMATION
TELEPHONE: 312/707-8889
TELEFAX: 312/707-9155
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INFORMATION FOR SEQ ID NO: 1:
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ATTORNEY/AGENT INFORMATION:
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LENGTH: 267 amino acids
Best Local Similarity 93.4 Matches 185; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ZIP: 60661
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
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STATE: Illinois
COUNTRY: USA
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61 ELSNHABLSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 120
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                                                                                                                                                                                                                                      1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-------NRVGLPINORFILV 47
                                                                                                                                                                                                                                                                                      1 IFPKOYPIINFTTAGATVOSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINORFILV 60
                                                                                                                                                                                 Indels 13; Gaps
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APPLICANT: Carroll, Stephen F.
APPLICANT: Carroll, Stephen F.
APPLICANT: Carroll, Gary M.
TITLE OF INVENTION: Immunotoxins Comprising Ribosome-Inactivating
TITLE OF INVENTION: Proteins
NUMBER OF SEQUENCES: 169
CORRESPONDENCE ADDRESS:
                                                                                                                                 Length 267;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER KEALALALE FORD

COMPUTER: IBM PC Compatible

COMPUTER: IBM PC Compatible

COMPUTER: IBM PC Compatible

COMPUTER: IBM PC Compatible

CONFUNCES: Patentin Release #1.0, Version #1.25

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/477,484B

FILING APPLICATION DATA:

APPLICATION NUMBER: US 08/425,336

FILING DATE: 18-APR-1995

PRIOR APPLICATION DATA:

APPLICATION NUMBER: US 08/064,691

FILING DATE: 12-MAY-1993

PRIOR APPLICATION NUMBER: US 07/988,430

PRIOR APPLICATION NUMBER: US 07/988,430

PRIOR APPLICATION NUMBER: US 07/988,430

PRIOR APPLICATION NUMBER: US 07/988,430

PRIOR APPLICATION NUMBER: US 07/988,430

PRIOR APPLICATION NUMBER: US 07/988,430

PRIOR APPLICATION NUMBER: US 07/988,430

PRIOR APPLICATION NUMBER: US 07/988,430
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REGISTRATION NUMBER: 32,918
REFERENCE/DCKET NUMBER: 11022US07/200-70.P3.C2A
TELECOMMUNICATION INFORMATION:
                                                                                                                      Score 934.5; DB 1;
Pred. No. 1.1e-101;
0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADDRESSEE: McAndrews, Held & Malloy, Ltd.
STREET: 500 West Madison Street, 34th floor
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FILING DATE: 19-JUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/787,567
FILING DATE: 04-NOV-1991
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 1, Application US/08477484B Patent No. 5756699 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 168 FOYIEGEMRIRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181 FOYIEGEMRTRIRYNRRS 198
                                                                                                                              98.3%;
                                                                                                                                                                              Matches 185; Conservative
                   TOPOLOGY: linear;
MOLECULE TYPE: protein
US-08-488-113B-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
TYPE: amino acid
                                                                                                                           Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CITY: Chicago
STATE: Illinois
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us-10-083-336a-9.rai

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E: McAndrews, Held & Malloy, Ltd.
500 West Madison Street, 34th floor
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PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/425,336
FILING DATE: 18-APR-1995
PRIOR APPLICATION NUMBER: US 08/064,691
PILING DATE: 12-MAY-1993
PRIOR APPLICATION DATA:
APPLICATION NAMBER: US 07/988,430
                                                                               200-70.P4
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MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC Compartible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 7
US-08-839-765-1
'S Sequence 1, Application US/08839765
'Patent No. 6146631
             ATTORNEY/AGENT INFORMATION:
NAME: MCNICholas, Janet M.
REGISTRATION UNDRER: 32,918
REFERENCE/DOCKET NUMBER: 200-7
TELECOMMUNICATION INFORMATION:
TELEPHONE: 312/707-8889
TELEFA: 312/707-9155
TELEFX: 650 388-1248
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
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                                                                                                                                                                                                                                      : 267 amino acids amino acids
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MOLECULE TYPE: protein
US-08-646-360-1
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STREET: 500
CITY: Chicago
FILING DATE:
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                                                                                                                                                                                                                                                                                                                                                                   1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 60
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APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Studmika, Gary M.
TITLE OF INVENTION: Immunotoxins Comprising Ribosome-Inactivating
TITLE OF INVENTION: Proteins
NUMBER OF SEQUENCES: 173
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                    98.3%; Score 934.5; DB 1; Length 267; 93.4%; Pred. No. 1.1e-101; ive 0; Mismatches 0; Indels 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
PALLCATION NUMBER: US/08/646,360
FILING DATE: 13-MAY-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           E: McAndrews, Held & Malloy, Ltd.
500 West Madison Street, 34th floor
                                                                                                                                                                                                                                                                                                                          1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT--
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PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/787,567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: US 08/064,691
FILING DATE: 12-MAY-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/988,430
FILING DATE: 09-DEC-1992
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1, Application US/08646360
Patent No. 5837491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FOYIEGEMRTRIRYNRRS 185
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APPLICATION NUMBER: PCT/US:
FILING DATE: 12-MAY-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                          : 267 amino acids
amino acid
  312/707-8889
                  TELEFAX: 312/707-9155
TELEX: 650 388-1248
INFORMATION FOR SEQ ID NO.
SEQUENCE CHARACTERISTICS:
LENGTH: 267 amino acid
                                                                                                                                                                                                                                                                                 Matches 185; Conservative
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PRIOR APPLICATION DATA:
APPLICATION NUMBER: U
                                                                                                                                                                         MOLECULE TYPE: protein
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STREET: buc
CITY: Chicago
                                                                                                                                                       linear
                                                                                                                                                                                                                                                               Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     19909
    TELEPHONE:
                                                                                                                                                     TOPOLOGY:
                                                                                                                                                                                              US-08-477-484B-1
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                                                                                                                                                                                                                                                                 Local
                                                                                                                                TYPE:
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48 ELSNHAELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
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                                                                                                                                                                                                                                                                                                                                                                                       108 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
                                                                                                                                                                                          1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 60
                                                                Indels 13; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Carroll, Stephen F.
TITLE OF INVENTION: Immunotoxins Comprising Ribosome-Inactivating
TITLE OF INVENTION: Proteins
TITLE OF SEQUENCES: 169
CORRESPONDENCE ADDRESS:
ADDRESSEE: MCANDRESS:
ADDRESSEE: MCANDRESS:
   Length 267;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION WHERE: US/08/839,765
FILING DATE: 15-APR-1997
Query Match 98.3%; Score 934.5; DB 2; Best Local Similarity 93.4%; Pred. No. 1.1e-101; Matches 185; Conservative 0; Mismatches 0;
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linear
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            48 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -----NRVGLPINORFILV 47
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Studnika, Gary M.
TITLE OF INVENTION: Immunotoxins Comprising Ribosome-Inactivating
TITLE OF INVENTION: Proteins
NUMBER OF SEQUENCES: 173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 934.5; DB 3; Length 267;
Pred. No. 1.1e-101;
0; Mismatches 0; Indels 13
              PRILING LALLS
PRIOR APPLICATION NUMBER: US 07/901,707
FILING DATE: 19-UW-1992
FILING DATE: 19-UW-1992
PRIOR APPLICATION NUMBER: US 07/787,567
APPLICATION NUMBER: US 07/787,567
FILING DATE: 04-NOV-1991
ATTORNEY/AGENT INFORMATION:
NAME: MCMIACholas, Janet M.
REGISTRATION NUMBER: 32,918
REFERENCE/POCKET NUMBER: 11022US09/200-70.P3.C3
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION THEORYATION:
TELECOMMUNICATION THEORYATION:
TELECOMMUNICATION: 11022US09/200-70.P3.C3
TELEFRAX: 312/707-8889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/136,389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-----
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STREET: 500 West Madison Street, 34th floor
CITY: Chicago
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/646,360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 1, Application US/09136389
Patent No. 6146850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                168 FQYIEGEMRTRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEX: 650 388-1248
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 267 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match

Best Local Similarity 93.4%;
Matches 185; Conservative
FILING DATE: 09-DEC-1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; MOLECULE TYPE: protein US-08-839-765-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CORRESPONDENCE ADDRESS:
ADDRESSEE: McAndrews,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CITY: Chicago
STATE: Illinois
COUNTRY: USA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FILING DATE:
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121 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 180
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 120
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 60
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APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Carroll, Stephen F.
APPLICANT: Studnika, Garry M.
TITLE OF INVENTION: Immunotoxins Comprising Ribosome-Inactivating TITLE OF SEQUENCES: 173
CORRESPONDENCE ADDRESS: 173
ADDRESSEE: MCANDREWB, Held & Malloy, Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      13;
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STREET: 500 West Madison Street, 34th floor
CITY: Chicago
CITY: Chicago
COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT--
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                                                                                                                                                                                       PETER ATTENDARY DATA
PETER ATTENDARY DATA
PETER ATTENDARY DATA
PETER OB-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/901,707
PILING DATE: 19-7UN-1992
PRIOR APPLICATION DATA:
ATTONNER: US 07/787,567
PILING DATE: 04-N0V-1991
ATTONNEY, AGENICATION NUMBER: 32,918
REGISTRATION NUMBER: 212,918
FELEPHONE: 312/707-9155
FELEPHONE: 312/707-9155
FELEPHONE: 567 amino acide
FENDER: CHARACTERISTICS:
                        APPLICATION NUMBER: PCT/US94/05348
FILING DATE: 12-MAY-1994
PRIOR APPLICATION DATA:
                                                                                                           APPLICATION NUMBER: US 08/064,691
FILING DATE: 12-MAY-1993
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 1, Application US/09610838 Patent No. 6376217
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MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
13-MAY-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       267 amino acids
amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity 93.4
Matches 185; Conservative
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1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-
                                                                                                                                                                                                                                                      MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (312) 984-9740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               : 267 amino acids
AMINO ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELEFAX: (312) 984-974:
TELEX: 25-3856
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MOLECULE TYPE: protein
                          CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                           COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
  NUMBER OF SEQUENCES:
                                                                                                                                                            Illinois
                                                                                                                                                                                                        60903
                                                                                                                                                          STATE: I.
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US-08-356-786-8
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APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Lane, Julie A.
APPLICANT: Lei, Shau-Ping
TITLE OF INVENTION: Materials Comprising and Methods of
TITLE OF INVENTION: Preparation and Use for Ribosome-Inactivating Proteins
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        48 ELSNHAELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYIFAFG 107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             108 GNYDRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
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                SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
FILLOATION NUMBER: US/09/610,838
FILLO DATE: 06-JUL-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 IFPKOYPIINFTTAGATVOSYTNFIRAVRGRLT
                                                                                                                                       FILING DATE: 18-AUG-1998
APPLICATION NUMBER: 08/646,360
FILING DATE: 13-MAY-1996
FILING DATE: 13-MAY-1996
FILING DATE: 12-MAY-1996
FILING DATE: 12-MAY-1904
                                                                                                                                                                                                                                                                                                                                                        PRIOR APPLICATION DATA:

APPLICATION NUMBER: US 07/988,430
FILING DATE: 09-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/901,707
FILING DATE: 19-UUN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/787,567
FILING DATE: 04-NOV-1991
ATTORNEY/AGENT INFORMATION:
NAME: MCANICHOLARS, Janet M.
REGISTRATION NUMBER: 32,918
REGISTRATION NUMBER: 32,918
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE/DOCKET NUMBER: 200-70.P4
TELECOMMUNICATION INFORMATION:
TELEPHONE: 312/707-8889
TELEFAX: 312/707-9155
                                                                                                                                                                                                                                                                                       PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/064,691
FILING DATE: 12-MAX-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 1, Application PC/TUS9209487
GENERAL INFORMATION:
APPLICANT: Bernhard, Susan L.
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       168 FQYIEGEMRTRIRYNRRS 185
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INFORMATION FOR SEQ ID NO: 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: amino acids
TOPOLOGY: 1:-
OLECIT'
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Best Local Similarity 93.44
Matches 185; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MOLECULE TYPE: protein US-09-610-838-1
                                                                                                                                    PRIOR APPLICATION DATA:
                                                                                      FILING DATE: 0
CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PCT-US92-09487-1
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49 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 120
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels 13; Gaps
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Patent No. 5877305
GENERAL INFORMATION:
APPLICANT: Huston, James S.
APPLICANT: Houston, L. L.
APPLICANT: Houston, L. L.
APPLICANT: Houston, L. L.
APPLICANT: Houston, Marker
TITLE OF INVENTION: Blosynthetic Binding Protein for Cancer
TITLE OF INVENTION: Marker
                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT APPLICATION DATA:

CURRENT APPLICATION DATA:

APPLICATION NUMBER: PCT/US92/09487

FILING DATE: 19921104

CLASSIFICATION DATA:

APPLICATION NUMBER: US 07/901,707

FILING DATE: 19-JUN-1992

PRIOR APPLICATION DATA:

APPLICATION NUMBER: US 07/787,567

FILING DATE: 04-NOV-1991

ATTORNEY AGENT INFORMATION:

NAME: Noland, Greta E.

REGISTRATION NUMBER: 35302

REGISTRATION NUMBER: 35302

REGISTRATION NUMBER: 35302
ADDRESSEE: Marshall, O'Toole, Gerstein, Murray & ADDRESSEE: Bicknell
                                                                    STREET: Two First National Plaza, 20 South Clark
STREET: Street
CITY: Chicago
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us-10-083-336a-9.rai

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US-08-485-286-27
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COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
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APPLICANT: HEY, TIMOTHY D
APPLICANT: MCGAN, ALICE ER
TITLE OF INVENTION: RIBOSOME-INACTIVATING PROTEINS, INACTIVE
TITLE OF INVENTION: PRECURSOR FORMS THEREOF, A PROCESS FOR MAKING A METHOD OF
TITLE OF INVENTION: USING
NUMBER OF SEQUENCES: 81
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 121
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 934.5; DB 2; Length 268; Pred. No. 1.1e-101;
               CORRESPONDENCE ADDESS:
ADDRESSEE: Edmund R. Pitcher, Testa, Hurwitz, & Thibeault STREET: Exchange Place, 53 State Street
                                                                                                                                                                                                                                         COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
OSOFTWARE: PATENTIN Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/356,786
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98.3%; Score 934.5;
Best Local Similarity 93.4%; Pred. No. 1.1e
Matches 185; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                    PHILING DATE:
CLASSIFICATION: 424
PLICK ATON 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/831,967
FILING DATE: 06-FEB-1992
ATTORNEY/AGENT INFORMATION:
NAME: Pitcher, Edmund R.
REFERENCE/DOCKET NUMBER: 27,829
REFERENCE/DOCKET NUMBER: CRP-053
TELEPHONE: (617) 248-7100
TELEPAX: (617) 248-7100
TELEPAX: (617) 248-7100
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STREET: 9330 ZIONSVILLE ROAD
CITY: INDIANAPOLIS
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      NUMBER OF SEQUENCES: 16
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                                                                                                                                                    STATE: Massachusetts
COUNTRY: USA
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                                                                                                                        CITY: Boston
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US-08-378-761A-27
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GENERAL INFORMATION:
APPLICANT: WALSH, TERENCE A
APPLICANT: WALSH, TERENCE A
APPLICANT: HEY, TIMOTHY D
APPLICANT: HEY, TIMOTHY D
APPLICANT: HEY, TIMOTHY D
APPLICANT: HEY, TIMOTHY D
APPLICANT: HEY, TIMOTHY D
APPLICANT: HEY, TIMOTHY D
APPLICANT: MORGAN, ALICE ER
TITLE OF INVENTION: RIBOSOME-INACTIVATING PROTEINS, INACTIVE
TITLE OF INVENTION: PRECURSOR FORMS THEREOF, A PROCESS FOR MAKING A METHOD OF
TITLE OF INVENTION: USING
NUMBER OF SEQUENCES: 81
CORRESPONDENCE ADDRESS:
ADDRESSEE: ANDREAT: BORUCKI
STREET: 9330 ZIONSVILLE ROAD
CITY: INDIANAPOLIS
STATE: IN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      48 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
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OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                          Patentin Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-----
                                                                            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 27, Application US/08485286; Patent No. 5646026; Patent No. 5646026 5646119
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                                                                                                                                                                                                                                                                                                                                                                                                                                             STRANDEDNESS: single
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MOLECULE TYPE: protein
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Search completed: February 10, 2004, 16:29:34
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           108 GNYDRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -----NRVGLPINORFILV 47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        25 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   13; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels 13; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match

98.3%; Score 934.5; DB 6; Length 290;
Best Local Similarity 93.4%; Pred. No. 1.3e-101;
Matches 185; Conservative 0; Mismatches 0; Indels 13.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       98.3%; Score 934.5; DB 1; Length 290; 93.4%; Pred. No. 1.3e-101; Live 0; Mismatches 0; Indels 13.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ALICE E.R.

TITLE OF INVENTION: DNA ENCODING INACTIVE PRECURSOR AND ACTIVE FORMS OF MAIZE RIBOSOME INACTIVATIN
NUMBER OF SEQUENCES: 49

CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/535,636

FILING DATE: 11-JUN-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: WALSH, TERENCE A.; HEY, TIMOTHY D.; MORGAN,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-
    APPLICATION NUMBER: US/08/485,286
                         FILING DATE:
CLASSIFICATION: 435
CLASSIFICATION DATA:
APPLICATION NUMBER: US 08/378761
FILING DATE: 25-3N-1995
ATTORNEY/AGRNT INFORMATION:
NAME: BORUCKI, ANDREA T
                                                                                                                                                                             REGISTRATION NUMBER: 33651
REFERENCE/DOCKET NUMBER: 38272B
TELECOMMUNICATION INFORMATION:
TELEPHONE: (317) 337-4846
INFORMATION FOR SEQ ID NO: 27:
SEQUENCE CHARACTERISTICS:
LENGTH: 290 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      168 FOYIEGEMRTRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 205 FOYIEGEMRIRIRYNRRS 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches 185; Conservative
                                                                                                                                                                                                                                                                                                                                                        STRANDEDNESS: single TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                          MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                          amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ;Patent No. 5248606
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Best Local
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48 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             108 GNYDRIEQIAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 934.5; DB 2; Length 534;
Pred. No. 3.1e-101;
0; Mismatches 0; Indels 13:
                                                                                                                              Sequence 10, Application US/08356786

Patent No. 5877305
GENERAL INFORMATION:
APPLICANT: Houston, James S.
APPLICANT: Houston, L. L.
APPLICANT: Houston, L. L.
APPLICANT: Ring, David B.
TITLE OF INVENTION: Blosynthetic Binding Protein for Cancer TITLE OF INVENTION: Marker
                                                                                                                                                                                                                                                                                                                                                              E: Edmund R. Pitcher, Testa, Hurwitz, & Thibeault
Exchange Place, 53 State Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/356,786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 IFPKOYPIINFTTAGATVOSYTNFIRAVRGRLT-
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168 FQYIEGEMRTRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME: Pitcher, Edmund R.
REGISTATION NUMBER: 27,829
REFERENCE/DOCKET NUMBER: CRE
TELECOMMUNICATION INFORMATION:
                            205 FQYIEGEMRTRIRYNRRS 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER: IBM PC compatible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEPHONE: (617) 248-7000
TELEFAK: (617) 248-7100
INFORMATION FOR SEQ ID NO: 10:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FILING DATE:
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/831
FILING DATE: 06-FEB-1992
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98.3%;
93.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            534 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches 185; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                , MOLECULE TYPE: protein US-08-356-786-10
                                                                                                                                                                                                                                                                                                                                                                                                                                      Massachusetts
                                                                                                                                                                                                                                                                                                                                                   CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                            USA
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                                                                                                      RESULT 15
US-08-356-786-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                            COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                               STREET:
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63

Job time : 11.6968 secs

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(without alignments)
1623.314 Million cell updates/sec
                                                                                                                                                                                                                                      February 10, 2004, 16:26:46; Search time 23.8621 Seconds
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'(cgn2_6/ptodata/1/pubpaa/USO6_NEW_PUB.pep:*
'(cgn2_6/ptodata/1/pubpaa/USO6_NEW_PUB.pep:*
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'(cgn2_6/ptodata/1/pubpaa/USO0_PUBCOMB.pep:*
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         801455 segs, 209382283 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Published_Applications_AA:*
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Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                            OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Minimum DB seq length: 0
Maximum DB seq length: 200000000
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                                                                                                                                                                                                                                                                                                                                                                                                                                       Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Seguence:
                                                                                                                                                                                                                                      Run on:
                                                                                                                                                                                                                                                                                                                                                                                              Title:
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

Sequence 1, Appli Sequence 1, Appli Sequence 1, Appli Sequence 6, Appli Sequence 11, Appl Sequence 3, Appli Sequence 5, Appli Appli Appli Appli Sequence 2, Appli Sequence 39, Appl Sequence 9, Sequence 1, Sequence 1, Sequence 8, Sequence 7, Sequence 4 Description US-10-083-336A-11 US-10-083-336A-3 US-10-083-336A-5 US-10-083-336A-10 US-10-127-890-1 US-10-083-336A-1 US-10-083-336A-8 US-10-440-796-1 US-10-083-336A-2 US-09-792-793A-39 US-10-083-336A-9 US-10-083-336A-6 US-10-083-336A-4 US-10-282-935-1 SUMMARIES G Query .Match Length DB 100.0 98.8 98.8 Score Result

181 YNRRS 185

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| Sequence 6, Appli Sequence 39, Appl Sequence 4, Appli Sequence 34, Appl | Sequence 34, Appl Sequence 3, Appli Sequence 3, Appli Sequence 7, Appli | Sequence 4, Appli Sequence 2, Appli Sequence 8, Appli Sequence 5, Appli | 1 | 4600 | 01101 | Sequence 104, App Sequence 105, App Sequence 11, Appl Sequence 11, Appl Sequence 109, App Sequence 259, App Sequence 253, App |
|--|--|--|--|--|--|---|
| US-10-127- US-10-375- US-10-280- US-09-792- | 12 US-10-375-209A-34 12 US-10-282-935-3 12 US-10-440-796-3 12 US-10-127-890-7 | US-10-17-890 US-10-127-890 US-09-347-064- US-10-17-890 | 2 US-10-127-890- 2 US-10-127-890- 2 US-10-127-890- | 12 US-10-127-890-111 9 US-09-765-527-247 12 US-10-127-890-2 12 US-10-127-890-99 | 12 US-10-127-890-100 12 US-10-127-890-101 12 US-10-127-890-102 12 US-10-127-890-103 | 12 US-110-127-890-104 12 US-110-127-890-105 12 US-110-074-596-1 12 US-10-177-890-109 12 US-09-765-527-259 9 US-09-765-527-253 |
| | | | | | | 251 316 316 507 251 309 |
| 35.5 35.5 31.6 | 31.6 30.0 30.0 | 27.6 | 25.2 | 25.2 25.1 25.1 25.1 | 255.1 255.1 255.1 15.1 15.1 15.1 | 255.1 255.1 255.1 250.0 250.0 250.0 |
| 0 99 99 | 300.5 285 285 270 5 | 268.5 262.5 262.5 | 2222 2442 1100 | 240 239 239 | 239 239 239 | 8880000 000000000000000000000000000000 |
| 16 17 18 | 22 22 22 24 | 40000 40000 | 28 29 30 | 332 34 | 3 3 4 8 5 8 5 8 5 8 5 8 5 8 5 8 5 8 5 8 5 8 | 2 4 4 4 4 4 4 2 2 2 0 11 13 16 14 13 |

ALIGNMENTS

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61 LDVTNATVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLAGNL 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121 RENIELGNGPLBEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRTRIR 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTNRVGLPINQRFILVELSNHAELSVTLA 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 IFPKOYPIINFTTAGATVOSYTNFIRAVRGRLTNRVGLPINQRFILVELSNHAELSVTLA 60
                                                                                                APPLICANT: Olson, Mark A
APPLICANT: Olson, Mark A
APPLICANT: Millard, Charles B
APPLICANT: Millard, Charles B
APPLICANT: Winea! P
APPLICANT: Wannemacher, Robert W
APPLICANT: Wannemacher, Robert W
APPLICANT: Wannemacher, Robert W
APPLICANT: Wannemacher, Robert W
APPLICANT: Wannemacher, Robert W
CURRENCE: P67452USO (RIID 01-58)
CURRENT APPLICATION NUMBER: US/10/083,336A
NUMBER OF SEQ ID NOS: 12
SOFTWARE: Patentin Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 LDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLAGNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               100.0%; Score 951; DB 12; Length 185; 100.0%; Pred. No. 1.5e-101; cive 0; Mismatches 0; Indels 0
                Sequence 9, Application US/10083336A Publication No. US20030181665A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity 100.0°
Matches 185, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: PRT
ORGANISM: Ricinus communis
                                                                                                                                                                                                                                                                                                                                                 SEQ ID NO 9
US-10-083-336A-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-083-336A-9
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US-10-083-336A-11
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US-10-083-336A-11
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 5
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121 GNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRT 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       58 TLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLA 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         118 GNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRT 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 IFPKOYPIINFTTAGATVOSYTNFIRAVRGRLTVLPNRVGLPINQRFILVELSNHAELSV 60
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 6, Application US/10083336A
Publication No. US20030181665A1
GENERAL INFORMATION:
APPLICANT: Olson, Mark A
APPLICANT: Olson, Mark A
APPLICANT: Byrne, Michael P
APPLICANT: Byrne, Michael P
APPLICANT: Byrne, Michael P
APPLICANT: Byrne, Michael P
APPLICANT: Byrne, Michael P
APPLICANT: Wannemacher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: P67452US0 (RIID 01-58)
CURRENT APPLICALTON NUMBER: US/10/083,336A
CURRENT PILING DATE: 2002-05-21
                                                                                                                   Sequence 4, Application US/10083336A
Publication No. US20030181665A1
GENERAL INFORMATION:
APPLICANT: Olson, Mark A
APPLICANT: Olson, Michael P
APPLICANT: Byrne, Michael P
APPLICANT: Mannemacher, Robert W
TITLE OF INVENTION: Richn Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: F67452USO (RIID 01-58)
CURRENT FILING DATE: 2002-05-21
NUMBER OF SEQ ID NOS: 15
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98.8%; Score 939.5; DB 12; Length 189;
Best Local Similarity 98.4%; Pred. No. 3.2e-100;
Matches 185; Conservative 0; Mismatches 0; Indels 3;
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SEQ ID NO 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM: Ricinus communis
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ORGANISM: Ricinus communis
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Best Local Similarity 98.4
Matches 185; Conservative
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181 YNRRS 185
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58 TLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLA 117
                                                                                                               62 TLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLA 121
                                                                                                                                                                          118 GNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRT 177
                                                                                                                                                                                                            122 GNLRENIELGNGPLEEAISALYYYSTGGTOLPTLARSFIICTOMISEAARFQYIEGEMRT 181
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APPLICANT: Olson, wark A
APPLICANT: Milard, Charles B
APPLICANT: Michael P
APPLICANT: Byrne, Michael P
APPLICANT: Wannemacher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: P67452050 (RID 01-58)
CURRENT APPLICATION NUMBER: US/10/083,336A
CURRENT FILING DATE: 2002-05-21
NUMBER OF SEQ ID NOS: 15
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 3
2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTVLPNRVGLPINQRFILVELSNHAELSV 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Olson, Mark A
APPLICANT: Olson, Mark A
APPLICANT: Millard, Charles B
APPLICANT: Byrne, Michael P
APPLICANT: Byrne, Michael P
APPLICANT: Wannemacher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: P67452US0 (RIID 01-58)
CURRENT FILING DATE: 2.002-05-21
NUMBER OF SEQ ID NOS: 15
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Pred. No. 3.3e-100;
0; Mismatches 0;
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98.4%;
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Best Local Similarity
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APPLICANT: Olson, Mark A
APPLICANT: Millard, Charles B
APPLICANT: Michael P
APPLICANT: Wannemacher, Robert W
APPLICANT: Wannemacher, Robert W
APPLICANT: Wannemacher, Robert W
APPLICANT: Wannemacher, Robert W
FILTLE OF INVENTIONS: Richin Vaccine and Methods of Making and Using Thereof
FILE REPERNCE: P67452USO (RIID 01-58)
CURRENT APPLICATION NUMBER: US/10/083,336A
NUMBER OF SEQ ID NOS: 15
SOFTWARE: PatentIn Ver. 2.1
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                                                                                                               DB 12; Length 198;
                                                                                              Score 934.5; DB 12; Description of the pred. No. 1.38-99; Transches 0; Indels
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Pred. No. 1.3e-99;
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                                                                                                        Query Match
98.3%; Score 934.5;
Best Local Similarity 93.4%; Pred. No. 1.36
Matches 185; Conservative '0; Mismatches
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93.4%;
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Best Local Similarity 93.4<sup>§</sup>
Matches 185; Conservative
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                     TYPE: PRT ORGANISM: Ricinus communis
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                                                      ; US-10-083-336A-3
LENGTH: 198
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                                                                                                               Query Match
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US-10-083-336A-10
, Sequence 10, Application US/10083336A
, Publication No. US20030181665A1
, GENERAL INFORMATION:

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48 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 107
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                    APPLICANT: Millard, Charles B
APPLICANT: Byrne, Michael P
APPLICANT: Byrne, Michael P
APPLICANT: Wannemacher: Wacaine and Methods of Making and Using Thereof
FILE REFERENCE: P67452US0 (RIID 01-58)
CURRENT APPLICATION NUMBER: US/10/083,336A
CURRENT FILING DATE: 2002-05-21
NUMBER OF SEQ ID NOS: 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Carroll, Stephen F.
Studnika, Gary M.
TITLE OF INVENTION: Immunotoxins Comprising Ribosome-Inactivating Proteins
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT-------NRVGLPINQRFILV
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Pred. No. 1.3e-99;
0; Mismatches 0; Indels 13; Gaps
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CURRENT APPLICATION DATA:
APPLICATION WHOBER: US/10/127,890
FILING DATE: 23-Apr-2002
CLASSIFICATION: <Unknown>
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ADDRESSEE: MCANDYEWS, Held & Malloy, Ltd.
STREET: 500 West Madison Street, 34th floor
CITY: Chicago
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER: PCT/US94/05348
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APPLICATION NUMBER: US 08/064,691
ELING DATE: 12-MAY-1993
APPLICATION NUMBER: US 07/988,430
FILING DATE: 09-DEC-1992
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APPLICATION NUMBER: US/08/646,360
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COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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Publication No. US20030166196A1
GENERAL INFORMATION:
APPLICANT: Better, Marc D.
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Best Local Similarity 93.4%;
Matches 185; Conservative (
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                                                                                                                                                                                                                                             SOFTWARE: Patentin Ver. 2.1 SEQ ID NO 10
                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Ricinus communis
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APPLICANT: Olson, Mark A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COUNTRY: USA
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                                                                                                                                                                                                                                                                                 Sequence 8, Application US/10083336A Publication No. US20030181665A1
                                                                                                                                168 FOYIEGEMRTRIRYNRRS 185
                                                                                                                                                                          216 FOYIEGEMRTRIRYNRRS 233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 7
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US-10-083-336A-7
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           108 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
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Publication No US20030181665A1
GENERAL INFORMATION:
APPLICANT: Olson, Mark A
APPLICANT: Millard, Charles B
APPLICANT: Myrael Pyrae, Michael P
APPLICANT: Wannemacher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: P67452USO (RIID 01-58)
CURRENT APPLICATION NUMBER: US/10/083,336A
CURRENT FILING DATE: 2002-05-21
NUMBER OF SEQ ID NOS: 15
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Pred. No. 6e-99;
0; Mismatches 0; Indels 13;
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                                                                              ATTORNEY/AGENT INFORMATION:
NAME: MCNicholas, Janet M.
REGISTRATION NUMBER: 32, 918
REFERENCE/DOCKET NUMBER: 200-70.P4
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                FILING DATE: 19-JUN-1992
APPLICATION NUMBER: US 07/787,567
FILING DATE: 04-NOV-1991
APPLICATION NUMBER: US 07/901,707
                                                                                                                                                                                                                                                                                                                                               TOPOLOGY: linear
MOLECULE TYPE: protein
SEQUENCE DESCRIPTION: SEQ ID NO: 1:
                                                                                                                                                                     TELECOMMUNICATION INFORMATION:
TELEPHONE: 312/707-8889
TELEFAX: 312/707-9155
                                                                                                                                                                                                                                                                                                      LENGTH: 267 amino acids
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INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
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Best Local Similarity 93.4%
Matches 185; Conservative
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Matches 185; Conservative
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96 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 155
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Publication No. US20030181665A1
GENERAL INFORMATION:
APPLICANT: Olson, Mark A
APPLICANT: Byrne, Michael P
APPLICANT: Byrne, Michael P
APPLICANT: Wannemacher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: P67452USO (RIID 01-58)
CURRENT FILLNG DATE: 2002-05-21
NUMBER OF SEQ ID NOS: 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Olson, Mark A
APPLICANT: Olson, Mark A
APPLICANT: Millard, Charles B
APPLICANT: Michael P
APPLICANT: Wannemacher, Robert W
APPLICANT: Wannemacher, Robert W
APPLICANT: Wannemacher, Robert W
APPLICANT: Wannemacher, Robert W
APPLICANT: Wannemacher, Robert W
APPLICANT: Wannemacher, Robert W
FILLE REFERENCE: P67453USO (RIID 01-58)
CURRENT FILLNG DATE: 2002-05-21
NUMBER OF SEQ ID NOS: 15
SOFTWARE: Patentin Ver. 2.1
                                                                     108 GNYDRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR
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97.2%;
93.4%;
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                                                                          APPLICANT: VITETTA, ELLEN S. APPLICANT: GHETIE, VICTOR F.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: PRT ORGANISM: Ricinus communis
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Best Local Similarity
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US-10-083-336A-2
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APPLICANT: GHETIE, VICTOR F.
APPLICANT: SMALLSHAW, JOAN
APPLICANT: BALUNA, ROXANA G.
TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR MODIFYING TOXIC BFFECTS OF
TITLE OF INVENTION: ROYDESTINACEOUS COMPOUNDS
FILE REPERENCE: UYSD:884US
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                                                                                                           ----NRVGLPINORFILVEL 49
                                                                                                                                                        3 PKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILVEL 62
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                                                        0; Indels 13; Gaps
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OTHER INFORMATION: Description of Artificial Sequence: Synthetic
OTHER INFORMATION: Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              97.2%; Score 924.5; DB 12; Length 267; 93.4%; Pred. No. 2.9e-98; tive 0; Mismatches 0; Indels 13;
Score 924.5; DB 12; Length 198; Pred. No. 1.9e-98; 0; Mismatches 0; Indels 13;
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                                                                                                           3 PKQYPIINFTTAGATVQSYTNFIRAVRGRLT
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CURRENT FILING DATE: 2002-10-29
PRIOR APPLICATION NUMBER: 09/538,873
PRIOR FILING DATE: 2000-03-30
PRIOR FILING DATE: 1999-03-30
PRIOR FILING DATE: 1999-03-30
NUMBER OF SEQ ID NOS: 23
SOFTWARE: PATENTIN VET: 2.1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  170 YIEGEMRTRIRYNRRS 185
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                                                                                                                                                                                                                                                                                                                                                                                                                   170 YIEGEMRIRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      183 YIEGEMRTRIRYNRRS 198
        97.28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM: Artificial Sequence
     Query Match
Best Local Similarity 93.4<sup>3</sup>
Matches 183; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches 183; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      D ID NO 1
LENGTH: 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-282-935-1
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US-10-282-935-1
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RESULT 13

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7;
                                                                                                              APPLICANT: GHETIE, VICTOR F.
APPLICANT: SMALLSHAW, JOAN
APPLICANT: BALUNA, ROXANG.
TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR AMELIORATING VASCULAR LEAK
TITLE OF INVENTION: SYNDROME (VLS)
FILE REPRENCE: UTSD:603
CURRENT APPLICATION NUMBER: US/10/440,796
CURRENT PILLING DATE: 2003-05-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                50 SNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGN 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              110 YDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQ 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62
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CURRENT APPLICATION NUMBER: US/10/083,336A
CURRENT FILING DATE: 2002-05-21
NUMBER OF SEQ ID NOS: 15
SOFTWARE: PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3 PKQYPIINFTTAGAIVQSYINFIRAVRGRLTTGADVRHBIPVLPNRVGLPINQRFILVBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63 SNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3 PKOYPIINFTTAGATVOSYINFIRAVRGRLT------NRVGLPINORFILVEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 924.5; DB 12; Length 267;
Pred. No. 2.9e-98;
0; Mismatches 0; Indels 13; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; OTHER INFORMATION: Description of Artificial Sequence: Synthetic; ; OTHER INFORMATION: Peptide
US-10-440-796-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     13;
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                                                                                                                                                                                                                                                                                                 PRIOR APPLICATION NUMBER: 2003-05-19
PRIOR APPLICATION NUMBER: US/09/538,873
PRIOR FILING DATE: 2000-03-30
PRIOR FILING DATE: 1999-03-30
PRIOR FILING DATE: 1999-03-30
NUMBER OF SEQ ID NOS: 19
SOFTWARE: PATENTIN VET. 2.1
SEQ ID NO 1
LENGTH: 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; Sequence 2, Application US/10083336A; Publication No. US20030181665A1; GENERAL INFORMATION:
Sequence 1, Application US/10440796 Publication No. US20040009148A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Millard, Charles B
APPLICANT: Byrne, Michael P
APPLICANT: Wannemacher, Robert W
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    170 YIEGEMRTRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           183 YIEGEMRTRIRYNRRS 198
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Sequence 39, Application US/09792793A

Patent No. US20020168370A1

GENERAL INFORMATION:
APPLICANT: McDonald, John R.
APPLICANT: McDonald, John R.
APPLICANT: McDonald, John R.
TITLE OF INVENTION: MCTHOR INFLAMMATORY CONDITIONS AND DISORDERS
TITLE OF INVENTION: OTHER INFLAMMATORY CONDITIONS AND DISORDERS
TITLE OF INVENTION: OTHER INFLAMMATORY CONDITIONS AND DISORDERS
TITLE OF INVENTION: OTHER INFLAMMATORY CONDITIONS AND DISORDERS
CURRENT FILING DATE: 2001-02-22
NUMBER OF SEQ ID NOS: 93
SOCIEMAN PATENTING VET. 2.0
SEQ ID NO 39
LENGTH: 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   59 LALDVINAYVVGYRAGNSAYFFHPDNQEDA-EAITHLFTDVQNRYTFAFGGNYDRLEQLA 117
                                                                                                      96 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDABAITHLFTDVQNRYTFAFG 155
                                                                                 48 ELSNHAELSVTLALDVINAYVVGYRAGNSAYFFHPDNQEDABAITHLFTDVQNRYTFAFG 107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9 INFITAGATVOSYTNFIRAVRGRLTN-----RVGLPINQRFILVELSNHAELSVT 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ------NRVGLPINQRFILV 47
                  36 IFPKQYPIINFTTAGATVQSYINFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
35.5%; Score 337.5; DB 10; Length 247;
Best Local Similarity 39.0%; Pred. No. 1.6e-30;
Matches 71; Conservative 42; Mismatches 50; Indels 19; Gaps
1 IFPKOYPIINFTTAGATVOSYTNFIRAVRGRLT-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Search completed: February 10, 2004, 16:53:54 Job time: 23.8621 secs
                                                                                                                                                                            108 GNYDRLEQLAGNLRENIELGNGPL 131
                                                                                                                                                                                                                    156 GNYDRLEQLAGNIRENIELGNGPL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: PRT ORGANISM: Trichosanthews kirilowii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              178 RI 179
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                                                                                                                                                                                                                                                                                        RESULT 15
US-09-792-793A-39
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GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
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OM protein - protein search, using sw model

February 10, 2004, 16:17:35; Search time 10.0111 Seconds (without alignments) 1777.145 Million cell updates/sec Run on:

US-10-083-336A-9 Title: Perfect score:

951 1 IFPKQYPIINFTTAGATVQS......ARFQYIEGEMRTRIRYNRRS 185 Sequence:

BLOSUM62 Gapop 10.0 , Gapext 0.5 Scoring table:

283308 segs, 96168682 residues Searched:

Total number of hits satisfying chosen parameters:

Minimum DB seq length: 0 Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

Database

PIR 76:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

| | Description | ricin D precursor | agglutinin precurs | rRNA N-glycosidase | karasurin - Mongol | - Д | karasurin C - Tric | abrin-d precursor | abrin-c precursor | abrin-b precursor | abrin (clone 7.2) | beta-luffin - smoo | pre | luffin-b - smooth | rRNA N-glycosidase | mistletoe lectin I | rRNA N-glycosidase | rRNA N-glycosidase | agglutinin I precu | rRNA N-glycosidase | rRNA N-glycosidase | rRNA N-glycosidase | rRNA N-glycosidase | rRNA N-glycosidase | rRNA N-glycosidase | antiviral protein | rRNA N-glycosidase | betavulgin - beet | rRNA N-glycosidase | rRNA N-glycosidase |
|---|---------------|-------------------|--------------------|--------------------|--------------------|--------|--------------------|-------------------|-------------------|-------------------|-------------------|--------------------|-------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|--------------------|-------------------|--------------------|--------------------|
| | ΠD | RLCSD | RLCSAG | RLTZT | JU0393 | JC5032 | JC5606 | \$32431 | S16022 | S32430 | C39761 | S23519 | TZLSA | JN0108 | S22494 | PD0018 | RLPUGG | S25560 | S62627 | JC4840 | JC4235 | JT0753 | S28421 | A39817 | S17757 | JE0401 | T12573 | JC4811 | 854 | \$28539 |
| | DB | 7 | | | | 7 | | | • | | | | | | • | | | | | | | | | | 7 | | | | 7 | 7 |
| | Length | 576 | 564 | 289 | 247 | 247 | 289 | 528 | 562 | 527 | 251 | 278 | 528 | 250 | 277 | 254 | 286 | 286 | .570 | . 245 | 286 | 316 | 294 | 278 | 313 | 261 | 289 | 272 | 253 | 253 |
| | Query | 98.3 | 88.9 | 35.5 | 34.4 | m | m | C) | М | ጣ | n | m | m | m | N | N | N | œ | 28.2 | á | 7. | 25.1 | | 18.7 | 17.7 | 17.6 | 15.8 | 14.6 | 13.8 | 13.4 |
| | Score | 934.5 | 4 | 337.5 | 327.5 | 327.5 | 327.5 | 317 | 317 | 316.5 | 310 | 297 | 291 | 290 | 276 | 272.5 | 270.5 | 268.5 | 268.5 | 266.5 | 261.5 | 239 | 184 | 177.5 | 168.5 | 167 | 150 | 138.5 | • | 127.5 |
| ŗ | Result No. | | 7 | e | 4 | 5 | 9 | 7 | 80 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 13 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |

| | | | | | | | | | | | | | • | | |
|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------|--------------------|--------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| rRNA N-glycosidase | TIDOSOME-THACLIVAL | rRNA N-glycosidase | rRNA N-glycosidase | rRNA N-glycosidase | rRNA N-glycosidase | tritin - wheat | rRNA N-glycosidase | rRNA N-glycosidase | protein synthesis | hypothetical prote | rRNA N-glycosidase | rRNA N-glycosidase | shiga-like toxin I | Shiga toxin 2 subu | Shiga toxin 2 subu |
| S29931 | 546239 | 805205 | S17519 | S28541 | RLQHG2 | 833631 | A58923 | RLBH | JC5848 | S21940 | 817932 | T03942 | I54695 | E90779 | G85640 |
| 01 0 | N | N | N | N | н | N | N | Н | N | (1) | 7 | 2 | 7 | N | N |
| 253 | 310 | 283 | 293 | 253 | 292 | 275 | 253 | 280 | 280 | 319 | 236 | 278 | 319 | 319 | 319 |
| 13.4 | 13.2 | 13.1 | 13.0 | 13.0 | 12.8 | 12.4 | 12.1 | 12.1 | 11.8 | 11.6 | 11.6 | 11.6 | 11.5 | 11.5 | 11.5 |
| 127.5 | 125.5 | 124.5 | 124 | 123.5 | 121.5 | 117.5 | 115.5 | 115.5 | 112.5 | 110.5 | 110 | 110 | 109.5 | 109.5 | 109.5 |
| 30 | et 89 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
| | | | | | | | | | | | | | | | |

RESULT 1

| _ | RLCSD |
|---|--|
| | ricin D precursor - castor bean |
| | N; Contains: rRNA N-glycosidase (EC 3.2.2.22) |
| | C;Species: Ricinus communis (castor bean) |
| | C;Date: 31-Dec-1993 #sequence_revision 31-Dec-1993 #text_change 16-Jul-1999 |
| - | C; Accession: A24041; S20513; A24614; A03372; A24010; A03374; S10903 |
| | R; Halling, K.C.; Halling, A.C.; Murray, E.E.; Ladin, B.F.; Houston, L.L.; Weaver, R.F |
| _ | Nucleic Acids Res. 13, 8019-8033, 1985 |
| _ | A, Title: Genomic cloning and characterization of a ricin gene from Ricinus communis. |
| | A; Reference number: A24041; MUID: 86067214; PMID: 2999712 |
| | A; Accession: A24041 |
| _ | A; Molecule type: DNA |
| - | A;Residues: 1-576 <hal></hal> |
| | A; Cross-references: GB:X03179; NID:g21082; PIDN: CAA26939.1; PID:g21083 |
| | R,Tregear, J.W.; Roberts, L.M. |
| | Plant Mol. Biol. 18, 515-525, 1992 |
| | A.Title: The lectin gene family of Ricinus communis: cloning of a functional ricin ge |
| - | Lot will die delivery of the latest the late |

r, R.F.

A; Reference number: S20513; MUID: 92163016; PMID: 1371405

.cin gene

A,Accession: S20513

A Molecule type: DNA
Mesidues: 1-576 cTRE>
A;Residues: 1-576 cTRE>
A;Residues: 1-576 cTRE>
A;Cross-references: BMBL:X52908; NID:g21084; PIDN:CAA37095.1; PID:g21085
B;Lamb, F.I.; Roberts, L.M.; Lord, J.M.
R;Lamb, F.I.; Roberts, L.M.; Lord, J.M.
A;Lie Biochem: 148, 265-270, 1986
A;Title: Nuclectide sequence of cloned cDNA coding for preproricin.
A;Reference number: A24614; MUID:85179479; PMID:3838723

A;Accession: A24614
A;Accession: A24614
A;Molecule type: mRNA
A;Resaidues: 12-75. 'D.'77-550,'R',552-576 <LAM>
A;Cross-references: GB:X02388; NID:g21077; PIDN:CAA26230.1; PID:g21078
B;Yoshitake, S.; Funatsu, G.; Funatsu, M.
Agric. Biol. Chem. 42, 1267-1274, 1978
A;File: Isolation and sequences of peptic peptides, and the complete sequence of Ile challence number: A03372

A; Accession: A03372

A,Molecule type: protein
A,Residues: 315-383, PS', 386-576 <ARA>
A;Residues: G.; Kimura, M.; Funatsu, M.
Agric. Biol. Chem. 43, 2221-2224, 1979
A,Title: Primary structure of Ala chain of ricin D.

A;Reference number: A03374 A;Accession: A03374

A; Molecule type: protein

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N.Alternate names: alpha-TCS; type I ribosome-inactivating protein Cyslidated] - Mongolian s N.Alternate names: alpha-TCS; type I ribosome-inactivating protein C;Species: Trichosanthes Kirilohii (Mongolian snake-gourd)
C;Date: 30-Sep-1988 Hasquence revision 26-Jan-1996 #text_change 23-Mar-2001
C;Accession: JT0566; A36274; JC1093; A36273; JT0003
R;Shaw, P.C.; Yung, M.H.; Zhu, R.H.; Ho, W.K.K.; Ng, T.B.; Yeung, H.W.
Gene 97, 267-272, 1991
A;Title: Cloning of trichosanthin cDNA and its expression in Escherichia coli.
A;Reference number: JT0566; MUID:91153657; PMID:1999291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AjExperimental source: tuber
R;Chow, T.P.; Feldman, R.A.; Lovett, M.; Piatak, M.
Biol. Chem. 265, 8670-8674, 1990
A;Title: Isolation and DNA sequence of a gene encoding alpha-trichosanthin, a type I rib
A;Reference number: A36274; MUID:90256790; PMID:2341400
                                                                                                                                                                                                                                  A; Molecule type: protein
A; Molecule type: protein
A; Molecule type: protein
A; Molecule type: protein has strong agglutinating activity and weak cytotoxicity compared
C; Coment: This protein has strong agglutinating activity and weak cytotoxicity compared
C; Superfamily: ricin; rRNA N-glycosidase homology
C; Keywords: duplication; glycoprotein; glycosidase; hydrolase; lectin; RNA binding; seed
C; Reywords: duplication; glycoprotein; glycosidase; hydrolase; lectin; RNA binding; seed
F; 25-29/Domain: rRNA N-glycosidase homology cRNG>
F; 25-28/Domain: rRNA N-glycosidase homology cRNG>
F; 35-28/Domain: rRNA N-glycosidase homology cRNG>
F; 30-364/Product: agglutinin chain B #status experimental cRCH>
F; 30-364/Product: agglutinin chain B #status experimental received
F; 30-364/Product: agglutinin chain B #status experimental predicted
F; 30-364/Product: agglutinin chain B #status predicted
F; 30-364/Product: agglutinin chain B #status predicted
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F; 30-364/Product: agglutinin chain B #status predicted
F; 30-364/Product: agglutinin chain B #status predicted
F; 30-364/Product: agglutinin chain B #status predicted
F; 30-364/Product: agglutinin chain B #status experimental
F; 33-37/Binding site: N-acetylgalactosamine (Asp, Asn) #status predicted
F; 33-7/Binding site: N-acetylgalactosamine (Asp, Asn) #status predicted
         R;Araki, T.; Yoshioka, Y.; Funatsu, G.
Biochim. Biophys. Acta 872, 277-285, 1986
A;Title: The complete amino acid sequence of the B-chain of the Ricinus communis aggluti:
A;Reference number: A24210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       85 ELSNHAELSVTLALDVTNAYVVGCRAGNSAYFFHPDNQEDAEAITHLFTDVQNSFTFAFG 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -----NRVGLPINORFILV 47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           25 IFPKQYPIINFTTADATVESYTNFIRAVRSHLTTGADVRHEIPVLPNRVGLPISQRFILV 84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     48 ELSNHAELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFIDVQNRYIFAFG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             108 GNYDRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
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A; Residues: 1-233, Tr, 235-246, Mr, 248-289 <CHO>
A; Cross-references: GB:105434; NID:9170534; PIDN:AAA34206.1; PID:9170535
R; Zheng, H.G.; Wang, B.; Shao, P.Z.; Yang, X.R.
Acta Genet. Sin. 21, 42-51, 1994
A; Title: Cloning and DNA sequencing of the gene encoding Trichosanthin.
A; Reference number: JC1093; MUID:94271613; PMID:8003348
A; Accession: JC1093
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A,Residues: 1-289 <SHA>
A,Cross-references: GB:M34858; NID:g170536; PIDN:AAA34207.1; PID:g170537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           88.9%; Score 845; DB 1; Length 564;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            85.4%;
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Matches 169; Conservative
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A; Residues: 315-335, NV, 337-342, NH, 345-362, 364-389, PS', 386-399, T', 401, D', 403, E', 40 A; Residues: 315-335, NV, 367-362, Summarizes the experimental details for the determination of a series, summarizes the experimental details for the determination of this paper, one of a series, summarizes the experimental details for the determinations in 200-278, 1991 summarizes the experimental details for the determination of the contents of the determination of the contents
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A,Residues: 1-564 <ROB>
A,Cross-references: GB:M12089; NID:g169700; PIDN:AAA33869.1; PID:g169701
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A.Accession: JC5032
A.Status: preliminary
A.Rolecule type: protein
A.Residues: 1-247 < KON>
C.Comment: This protein belongs to type I ribosomal-inactivating proteins which catalytic
C.Superfamily: rRNA N-glycosidase; rRNA N-glycosidase homology
F;4-243/Domain: rRNA N-glycosidase homology < RNG>
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R;Kondo, T.; Mizukami, H.; Takeda, T.; Ogihara, Y.
Ricondo, T.; Mizukami, H.; Takeda, T.; Ogihara, Y.
Biol. Pharm. Bull. 19, 1485-1489, 1996
A;Title: Amino acid sequences and ribosome-inactivating activities of karasurin-B and kara;Reference number: JC5032; MJID:97108848; PMID:8951169
                                                                                                                                                              karasurin.
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C,Date: 30-Sep-1991 #sequence_revision 30-Sep-1991 #text_change 12-Apr-1995 C;Accession: JU0393; PS0163
R,Toyokawa, S.; Takeda, T.; Kato, Y.; Wakabayashi, K.; Ogihara, Y. Chem. Pharm. Bull. 39, 1244-1249, 1991
Chem. Pharm. Bull. 39, 1244-1249, 1991
A,Title: The complete amino acid sequence of an abortifacient protein, karas A,Reference number: JU0393; MUID:92005921; PMID:1914000
A,Accession: JU0393
A,Accession: JU0393
A,Molecule type: protein
A,Residues: 1-247 <TOY>
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C;Species: Trichosanthes kirilowii var. japonica
C;Date: 27-Feb-1997 #sequence_revision 27-Feb-1997 #text_change 23-May-1997
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                                                                                                                                                                                                                                                                                                                                A,Note: a sequence which lacks Ala-247 is also shown in this publication C,Superfamily: FRNA N-glycosidase, rRNA N-glycosidase homology C;Keywords: abortifacient F;4-243/Domain: rRNA N-glycosidase homology <RNG>
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         34.4%; Score 327.5; DB 2; Length 247; 39.0%; Pred. No. 8.6e-23;
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Matches 71; Conserv
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Submitted to the Brookhaven Protein Data Bank, December 1994
A,Reference number: A66711; PDB:TCS
A,Contents: annotation; X-ray crystallography, 1.7 angstroms, with NADPH, residues 24-27
R;Xiong, J.P.; Xia, Z.X.; Wang, Y.
R;Xiong, J.P.; Xia, Z.X.; Wang, Y.
A;Xieng, J.B.; Xia, Z.X.; Wang, Y.
A;Xiele: Crystal structure of trichosanthin-NADPH complex at 1.7 Angstroms resolution re
A,Reference number: A58622; MUID:95360714; PMID:7634073
                                                                                                                                                                                                                                                                                                      A;Molecule type: protein
A;Residues: 24-270 <CCL>
K;Wang, Y; Qian, R.Q.; Gu, Z.W.; Jin, S.W.; Zhang, L.Q.; Xia, Z.X.; Tian, G.Y.; Ni, C.Z
By Pure Appl. Chem. 58, 789-798, 1986
A;Title: Scientific evaluation of Tian Hua Fen (THF): history, chemistry and application
                                                             A; Residues: 1-72,'V',74-90,'S',92-233,'T',235-267,'D',269-289 <ZHE>
A; Cross-references: GB:S70176; NID:9547148; PIDN:AAB31048.1; PID:9547149
E; Collins, E.J.; Robertus, J.D.; LoPresti, M.; Stone, K.L.; Williams, K.R.; Wu, P.; Hwan J. Biol. Chem. 265, 8665-8669, 1990
A; Title: Primary amino acid sequence of alpha-trichosanthin and molecular models for abz A; Reference number: A36273; MUID:90256789; PMID:2341399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Description: hydrolyzes the N-glycosidic bond of a specific adenosine in 28S rRNA ther
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               residues 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             24.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Molecule type: protein
A;Residues: 24-56,'L',58-59,'I',61-71,'I',73-81,85-86,'L',88-92,'DAGLPRNAVL',93-142,'GL
A;Experimental source: tuber
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 R.Huang, Q.; Liu, S.; Tang, Y.; Jin, S.; Wang, Y. submitted to the Brookhaven Protein Data Bank, July 1994
A.Reference number: A67091; PDB:1MKJ
A.Contents: annotation; X-ray crystallography, 1.6 angstroms, with adenine, residues R.Huang, Q.; Liu, S.; Tang, Y.; Jin, S.; Wang, Y. submitted to the Brookhaven Protein Data Bank, July 1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         4
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            85 VAIDVTNVYIMGYRAGDTSYFF---NEASATEAAKYVFKDAMRKVTLPYSGNYERLQTAA 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                118 GNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRT 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   25 VSFRLSGATSSSYGVFISNLRKALPNERKLYDIPLLRSSLPGSQRYALIHLTNYADETIS 84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               with formycin,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C;Superfamily: rÄNA N-glycosidase; rRNA N-glycosidase homology
C;Keywords: abortifacient; glycosidase; hydrolase; root; toxin
F;1-23/Domain: signal sequence #status predicted <SIG>
F;24-270/Product: trichosanthin alpha #status experimental <MAT>
F;27-26f/Domain: rRNA N-glycosidase homology <RNG>
F;271-289/Domain: carboxyl-terminal propeptide #status predicted <CTP>
F;93,183,186/Active site: TYr, Glu, Arg #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     19;
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A;Contents: annotation; X-ray crystallography, 1.7 angstroms C;Comment: Alpha-trichosanthin has been used to induce abortions.

:Genetics:

A;Reference number: A67092; PDB:1MRK A;Contents: annotation; X-ray crystallography, 1.6 angstroms,

A; Reference number: JT0003

A, Accession: JT0003

A; Accession: A36273

50; Indels

35.5%; Score 337.5; DB 1 39.0%; Pred. No. 1.3e-23; 42; Mismatches

Best Local Similarity 39.0 Matches 71; Conservative

Query Match

9 INFITAGATVQSYTNFIRAVRGRLTN-----

ð g à

karasurin - Mongolian snake-gourd C;Species: Trichosanthes kirilowii (Mongolian snake-gourd) RESULT 4 JU0393

RI 179 RV 198

178 142

> à g

Db

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A.Residues: 1-562 <WOOD.
A.Cross-references: BMBL:X55667; NID:g16084; PIDN:CAA39202.1; PID:g16085
A.Cross-references: BMBL:X55667; NID:g16084; PIDN:CAA39202.1; PID:g16085
C.Comment: Abrin consists of an A chain, which inhibits protein synthesis by inactivating the A chain are linked by a single disulfide bond, which is essential for toxicing and and B chains are linked by a single disulfide bond, which is essential for toxicing the A and B chains are linked by a single disulfide bond, which is essential for toxicing a grecoprotein; glycopaidase, hydrolase; lectin, pyroglutamic aciderates and a superception and a status predicted cachology candomners abrin-c chain B status predicted cachology cacho
                 And the A and B chains are linked by a single disulfide bond, which is essential for toxicily comment: Abrin consists of an A chain, which inhibits protein synthesis by inactivating the A and B chains are linked by a single disulfide bond, which is essential for toxicily comperfamily: richi, FRNA N-elycosidase homology

Fig. 251/Product: abrin-d chain A #status predicted ACH>
Fig. 251/Product: abrin-d chain B #status predicted ACH>
Fig. 251/Product: abrin-d chain B #status predicted ACH>
Fig. 251-258/Product: abrin-d chain B #status predicted ACH>
Fig. 251-258/Product: abrin-d chain B #status predicted ACH>
Fig. 325,326-366,369-407,414-449,453-492,495-528/Region: 40-residue repeats
Fig. 325,326-366,359-407,414-449,453-492,495-528/Region: 40-residue repeats
Fig. 11/Modified site: pyrrolidone carboxylic acid (Gin) #status predicted
Fig. 11/Fig. 195,196/Rinding site: substrate (Tyr, Tyr, Glu, Asn) #status predicted
Fig. 11/
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K:Wood, K.A.; Lord, J.M.; Wawrzynczak, E.J.; Piatak, M.
Bur. J. Biochem. 198, 723-732, 1991
A,Title: Preproabrin: genomic cloning, characterisation and the expression of the A-chai.
A,Reference number: S16022; MUID:91266957; PMID:2050149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         117 ERWAHQTREEISLGLQALTHAIS---FIRSGASNDEBKARTLIVIIOMASEAARYRYISN 173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      54 ELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRL 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ----NORFILVELSNHA 53
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F;534,555/Binding site: N-acetylgalactosamine (Asp, Asn) #status predicted
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 528;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5 QYPIINFTTAGATVQSYTNFIRAVRGRLTNRV--GLPI---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   33.3%; Score 317; DB 2; 42.8%; Pred. No. 2.1e-21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              23; Mismatches
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N;Contains: rRNA N-glycosidase (EC 3.2.2.22)
C;Species: Abrus precatorius (Indian licorice)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          80; Conservative
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A;Cross-references: GB:M98346
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       174 RVGVSIR 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Accession: S16022
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R; Mizukami, H.; Iida, K.; Kondo, T.; Ogihara, Y.
Biol. Pharm. Bull. 20, 711-713, 1997
R; Mizukami, H.; Iida, K.; Kondo, T.; Ogihara, Y.
Biol. Pharm. Bull. 20, 711-713, 1997
A; Title: Cloning and bacterial expression of a gene encoding ribosome-inactivating prote A; Reference number: JC5006; MUID:97356562; PMID:9212998
A; Reference number: JC5006
A; Molecule type: DNA
A; Residues: 1-289 (MIZ>
A; Cross-references: DDBJ-ABD000666; NID:92329830; PIDN:BAA21786.1; PID:92329831
B; Kondo, T.; Mizukami, H.; Takeda, T.; Ogihara, Y.
Biol. Pharm. Bull. 19, 1485-1489, 1996
A; Title: Amino acid sequences and ribosome-inactivating activities of karasurin-B and ka A; Reference number: JC5032; MUID:97108848; PMID:8951169
A; Accession: JC5033
A; Ratus: preliminary
A; Molecule type: protein
A; Reference number: This protein is a ribosome-inactivating protein and exhibit cytotoxic, aborti C; Comment: This protein is a ribosome-inactivating protein and exhibit cytotoxic, aborti C; Comment: This protein is a ribosome-inactivating protein and exhibit cytotoxic, aborti C; Comment: This protein belongs to type I ribosomal-inactivating proteins which catalyti C; Superfamily: RNA N-91ycosidase; RNA N-91ycosidase homology
F; 22-270 Product: karasurin A # status predicted (AAC>
F; 24-270/Product: karasurin A # status predicted (AAC>
F; 24-270/Product: karasurin A # Status predicted (AAC>
F; 27-266/Domain: rRNA N-91ycosidase homology (RNAC>
F; 27-266/Domain: RNA N-91ycosidase homology (RNAC>
F; 27-266/Domain: RNA N-91ycosidase homology (RNAC>
F; 27-266/Domain: RNA N-91ycosidase homology (RNAC>
F; 27-266/Domain: RNA N-91ycosidase homology (RNAC>
F; 27-266/Domain: RNA N-91ycosidase homology (RNAC>
F; 27-266/Domain: RNA N-91ycosidase homology (RNAC>
F; 27-266/Domain: RNA N-91ycosidase homology (RNAC>
F; 27-266/Domain: RNA N-91ycosidase homology (RNAC>
F; 27-266/Domain: RNA N-91ycosidase homology (RNAC>
F; 27-266/Domain: RNA N-91ycosidase homology (RNAC>
F; 27-266/Domain: RNA N-91ycosidase homology (RNAC)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               85 VAIDVINVYVMGYRAGDISYFF---NEASAIEAAKYVFKDAKRKVTLPYSGNYERLQIAA 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       118 GNLRENIELGNGPLEEAISALXYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRT 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          59 LALDVTNAYVVGYRAGNSAYFFHPDNQEDA-EAITHLFTDVQNRYTFAFGGNYDRLEQLA 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   25 VSFRLSGATSSSYGVFISNIRKALPYERKLYDIPLIRSTLPGSQRYALIHLTNYADETIS 84
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C;Species: Abrus precatorius (Indian licorice)
C;Date: 30-Sep-1993 #sequence_revision 01-Aug-1997 #text_change 01-Aug-1997
C;Accession: S32431; S34408
R;Hung, C.H.; Lee, M.C.; Lin, J.Y.
J. Mol. Biol. 229, 263-267, 1993
                                                                                                                                                                                                                            N;Contains: karasurin A
C;Species: Trichosanthes kirilowii var. japonica
C;Date: 23-Sep-1997 #sequence_revision 23-Sep-1997 #text_change 19-Jul-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9 INFITAGATVQSYTNFIRAVRGRLTN------RVGLPINQRFILVELSNHAELSVT
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                                                                                                                                                                             karasurin C - Trichosanthes kirilowii var. japonica
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A;Accession: S34408
A;Molecule type: mRNA
A;Residues: 1-169, C',171-320,'L',322-528 <HUZ>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Molecule type: mRNA
A;Residues: 1-528 cHUN>
A;Cross-references: GB:M98346
A;Cross-references: GB:M98346
M; Lee, T.; Lin, J.
submitted to the EMBL Data Library, March 1993
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Best Local Similarity
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C;Accession: $22519; $23113
R;Kataoka, J.; Habuka, N.; Miyano, M.; Masuta, C.; Koiwai, A.
Plant Mol. Biol. 19, 887-889, 1992
A;Title: Nucleotide sequence of cDNA encoding beta-luffin, another ribosome-inactivating A;Reference number: $23519; MUID:92353400; PMID:1643290
A;Accession: $23519
                                                                                                              abrin (clone 7.2) precursor - Indian licorice (fragment)
N;Contains: rRNA N-glycosidase (EC 3.2.2.2)
C;Species: Abrus precatorius (Indian licorice)
C;Date: 21-Feb-1992 #sequence_revision 31-Dec-1993 #text_change 20-Aug-1999
C;Accession: C39761; S14471.
N;Evensen, G.; Mathiesen, A.; Sundan, A.
J. Biol. Chem. 266, 6848-6852, 1991
A;Fithe: Direct molecular cloning and expression of two distinct abrin A-chains.
A;Reference number: A39761; MUD:91201329; PMID:2016300
A;Accession: C39761
A;Molecule type: DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Reference number: S14471
A;Accession: S14471
A;Accession: S14471
A;Accession: S14471
A;Accession: S14471
A;Accession: S14471
A;Accession: S14471
A;Cross-references: EMBL:X54872; NID:q16088; PIDN:CAA38654.1; PID:q16089
A;Cross-references: EMBL:X54872; NID:q16088; PIDN:CAA38654.1; PID:q16089
C;Superfamily: ricin; rRNA N-g1ycosidase homology
C;Keywords: duplication; g1ycosidase; hydrolase; lectin; toxin
F;1-251/Product: abrin (clone 7.2) chain A #status predicted «ACH»
F;7-246/Domain: FRNA N-g1ycosidase homology cRNG
F;7-4113,195,196/Binding site: substrate (Tyx, Glu, Asn) #status predicted
F;164,167/Active site: Glu, Arg #status predicted
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   63 SIEVGIDVTNAYVVAYRAGSQSYFL---RDAPASASTYLFTGTQ-RYSLRFDGSYGDLER 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                116 LAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIOMISEAARFQYIEGEM 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  119 WAHQTREQISLGLQALTHAIS---FLRSGASNDEEKARTLIVIIQMASEAARYRYISNRV 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9 INFITAGATVQSYTNFIRAVRGRLTNRVGL----PI-----NQRFILVELSNHAEL 55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5 İKFSTEGATSQSYKQFIEALRERL--RGGLIHDIPVLRDPTTVEERNRYITVELSNSERE 62
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C;Date: 17-Apr-1993 #sequence_revision 17-Apr-1993 #text_change 20-Aug-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    18; Gaps
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A;Residues: 1-278 «KAT»
A;Cross-references: EMBL:X62372; NID:g19149; PIDN:CAA44230.1; PID:g19150
C;Superfamily: rRNA N-glycosidase; rRNA N-glycosidase homology
F;26-264/Domain: rRNA N-glycosidase homology «RNG»
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Residues: 1-251 <EVE>
R;Evensen, G.; Mathiesen, A.; Sundan, A.
submitted to the EMBL Data Library, October 1990
A;Description: Direct molecular cloning of two distinct abrin A-chains.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       22;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match 32.6%; Score 310; DB 2; Length 25:
Best Local Similarity 43.8%; Pred. No. 3.6e-21;
Matches 81; Conservative 21; Mismatches 61; Indels
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A,Title: The complete amino acid sequences of the B-chains of Abrin-a and Abrin-b, toxid
A,Reference number: JC1398; MUID:93169023; PMID:7763422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A, Molecule type: protein
A, Residues: 260-281, 'D', 283-290, 'N', 292-349,' PQ', 352-377,' N', 379-425,' M', 427,' D', 429-430
A, Residues: 260-281, 'D', 283-290,' N', 292-349,' PQ', 352-377,' N', 379-425,' M', 427,' D', 429-430
C, Residues: 260-281, 'D', 286-401, 'B' Control of the seed
C, Superfamily: ricin: rRNA N-glycosidase homology
C, Keywords: disulfide bond; duplication; glycoprotein; glycosidase; hydrolase; lectin; p. F, 1-250/Product: abrin-b chain A #status predicted <ACH>F, 245/Domain: rRNA N-glycosidase homology <ACH
F, 245/Domain: rRNA N-glycosidase homology <ACH
F, 250-224, 325-365, 368-406, 413-448, 452-491, 444-527/Region: 40-residue repeats
F, 282-124, 325-365, 368-406, 413-448, 452-491, 444-527/Region: 40-residue repeats
F, 110, 360, 400/Binding site: carbohydrate (Asn) (covalent) #status predicted
F, 110, 360, 400/Binding site: carbohydrate (Asn) (covalent) #status predicted
F, 246-268, 288-304, 328-345, 416-429, 455-472/Disulfide bonds: #status predicted
F, 499, 520/Binding site: N-acetylgalactosamine (Asp, Asn) #status predicted
F, 499, 520/Binding site: N-acetylgalactosamine (Asp, Asn) #status predicted
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J. Mol. Biol. 229, 268-267, 1993
A. Mol. Biol. 229, 268-267, 1993
A.Fitle: Primary Structure of three distinct isoabrins determined by cDNA sequencing. A, Reference number: S32429, MUID:93132798; PMID:8421313
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61 TESIEAGIDVSNAYVVAYRAGNRSYFL---RDAPTSASRYLFTGTQ-QYSLRFNGSYIDL 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           114 EQLACNLRENIELGNGPLEEAISALYYSTGGTQLPTLARSFIICTQMISEAARFQYIEG 173
                                                                                                                                                                                                                         95 RESIEVGIDVINAXVVAXRAGSOSYFL---RDAPASASITYLFPGTQ-RYSLRFDGSYGDL 150
                                                                                                                                                                                                                                                                                                       114 EQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEG 173
                                                                                                                                                                                                                                                                                                                                                    1 ODQVIKFTTEGATSQSYKQFIEALRQRLTGGLIHGIPVLPDPTTLQERNRYISVELSNSD 60
                                                                                                                                               ELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRL 113
                                                                 35 ÓDQVÍKFTTEGATSÓSYKQFIEALKQRLTGGLIHDIPVLPDPTTVEERNRYÍTVELSNSE 94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N;Contains: rRNA N-glycosidase (BC 3.2.2.2)
C;Species: Abrus precatorius (Indian licorice)
C;Date: 30-Sep-1993 #sequence_revision 01-Aug-1997 #text_change 20-Aug-1999
C;Accession: S32430; JC1399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5 QYPIINFTTAGATVQSYTNFIRAVRGRLTNRV--GLPI------NQRFILVELSNHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .3e-21;
nes 66; Indels 19; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .Cross-references: GB:M98345; NID:gl.66296; PIDN:AAA32625.1; PID:gl.66297; Kimura, M.; Sumizawa, T.; Funatsu, G.
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OYPIINFTTAGATVOSYTNFIRAVRGRLTNRV--GLPI--
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42.9%; Pred. No. 2.3e-
tive 23; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  abrin-b precursor - Indian licorice (fragment)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             81; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                   174 EMRTRIR 180
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Best Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Molecule type: mRNA
A; Residues: 1-527 <HUN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Accession: JC1399
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A, Molecule type: protein
A, Molecule type: protein
A, Residues: 262-276, 'X', 278-280,329-348,369-388,399-418 <LIW>
A, Residues: 262-276, 'X', 278-280,329-348,369-388,399-418 <LIW>
A, Experimental seged
C, Comment: Abrin-a is more toxic than ricin. The toxin consists of an A chain, which inh circin rank brin-a is more toxic than ricin. The A and B chains are linked by a single disulfication; programming receptors on the cell surface. The A and B chains are linked by a single disulficianing receptors on the cell surface. The A and B chains are linked by a single disulficianing acid cyloperfored; all appropriate and B,
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R;Islam, M.R.; Hirayama, H.; Funatsu, G.
Agric. Biol. Chem. 55, 229-238, 1991
A;Title: Complete amino acid sequence of luffin-b, a ribosome-inactivating protein from A;Reference number: JN0108; MUD:91248488; PMID:1368666
A;Accession: JN0108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       63 ŚIEVGIDVTNAYVVAXRAGTQSYFLRDAPSSASD----YLFTGT-DQHSLPFYGTYGDL 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       114 EQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIOMISEAARFQYIEG 173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          C,Species: Luffa cylindrica (smooth loofah)
C,Date: 04-Sep-1998 #sequence_revision 04-Sep-1998 #text_change 07-May-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9 INFTTAGATVQSYTNFIRAVRGRLTNRVGL----PI-----NQRFILVELSNHAEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5 İKFSTEGATSQSYKQFIEALRERL--RGGLIHDIPVLPDPTTLQERNRYITVELSNSDTE
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                                                                                                                                                            A; Molecule type: protein
A; Residues: 262-297, 'Y', 299-426,'L', 428-466,'P', 468-482,'L', 484-528 < CHE>
R; Lin, S. H.; Chow, L. P.; Chen, Y. L.; Liaw, Y. C.; Chen, J. K.; Lin, J. Y.
Eur. J. Biochem. 240, 564-569, 1996
A; Title: Probing the domain structure of abrin-a by tryptic digestion.
A; Reference number: S74110; MUID:97008945; PMID:8856055
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 2; Length 250;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match 30.6%; Score 291; DB 1; Length 528; Best Local Similarity 40.6%; Pred. No. 5.3e-19; Matches 76; Conservative 26; Mismatches 59; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          C; Superfamily: rRNA N-glycosidase; rRNA N-glycosidase homology
                           A;Title: The complete primary structure of abrin-a B chain.
A;Reference number: S24133; MUID:92371656; PMID:1505674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    F;5-246/Domain: rRNA N-glycosidase homology <RNG>
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Molecule type: protein
A;Residues: 89-108;154-172 <LIN>
A;Experimental source: seed
309, 115-118, 1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           174 EMRTRIR 180
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                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Accession: S74110
                                                                                                                            A; Accession: S24133
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A;Actession: A39761
A;Status: nucleic acid sequence not shown
A;Acteule type: DNA
A;Residues: 'E',2-251 <EVE>
A;Cross-references: GB:X54872
A;Cross-references: GB:X54872
A;Note: residues: 1-8 were derived from the synthesized primer
B;Kimura, M.; Sumizawa, T.; Funatsu, G.
B;Stille: The complete amino acid sequences of the B-chains of Abrin-a and Abrin-b, toxic
A;Reference number: JC1398; MUID:93169023; PMID:7763422
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A; Residues: 1-201, 203-251 < FUN>
A; Note: the aminoterminal residue forms pyrrolidone carboxylic acid; therefore, we have
R; Evensen, G: Mathiesen, A: Sundan, A.
J. Biol. Chem. 266, 6848-6852, 1991
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C;Species: Abrus precatorius (Indian licorice)
C;Species: Abrus precatorius (Indian licorice)
C;Date: 31-Dec-1993 #sequence revision 01-Aug-1997 #text change 16-Jul-1999
C;Accession: S32429; JT0202; A39761; JC1398; S14472; S24133; S74110; S74111
R;Hung, C.H.; Lee, M.C.; Lee, T.C.; Lin, J.Y.
J. Mol. Biol. 229, 263-267, 1993
A;Title: Primary structure of three distinct isoabrins determined by CDNA sequencing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A Molecule type: mRNA
A, Residues: 'E', 2-528 - HUNA
A, Residues: 'E', 2-528 - HUNA
A, Residues: 'E', 2-528 - HUNA
A, Residues: 'E', 2-528 - HUNA
A, Roces: the coding region for the sequence shown is preceded by an ATG codon
A, Note: the coding region for the sequence shown is preceded by an ATG codon
A, Note: residues 1-8 were derived from the synthesized primer
R, Funatsu, G.; Taguchi, Y.; Kamenosono, M.; Yanaka, M.
A, Funatsu, G.; Taguchi, Y.; Kamenosono, M.; Yanaka, M.
A, Title: The complete amino acid sequence of the A-chain of abrin-a, a toxic protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    R.Evensen, G.; Mathiesen, A.; Sundan, A. J. Biol. Chem. 266, 6848-685, 1991.
A.Title: Direct molecular cloning and expression of two distinct abrin A-chains. A;Reference number: A39761; MUID:91201329; PMID:2016300
                                                                                                                                                                                                                   59 LALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLAG 118
                                                                                                                                                                                                                                                                                                           84 MAIDVTNVXIMGYLVNSTSYFF---NESDAKLASQYVFKGSTIVTLPYSGNYERLONAAG 140
                                                                                                                                                                                                                                                                                                                                                                                              119 NLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIOMISEAARFQYIEGEMRTR 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                24 VSFSLSGADSKSYSKFITALRKALPSKEKVSNIPLLLPSASGASRYILMQLSNYDAKAIT 83
                                         9 INFTTAGATVOSYTNFIRAVRGRLTNR---VGLPI-----NORFILVELSNHAELSVT 58
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*Residues: 'ME',2-251 <EV2>
A;Cross-references: EMBL:X54873; NID:g16090; PIDN:CAA38655.1; PID:g16091
R;Chen, Y.L.; Chow, L.P.; Tsugita, A.; Lin, J.Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 R,Evensen, G.; Mathiesen, A.; Sundan, A. submitted to the EMBL Data Library, October 1990
A,Description: Direct molecular cloning of two distinct abrin A-chains.
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A;Residues: 261-347,'T',349-351,'A',353-357,'L',359-528 <KIM>
A;Experimental source: seed
R;Evensen, G.; Mathiesen, A.; Sundan, A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A,Reference number: S12429; MUID:93132798; PMID:8421313
A,Accession: S32429
A,Status: nucleic acid sequence not shown
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|--|--|--|---|-----------------|---------------------|--|--|
| Best Local Similarity 33.2%; Pred. No. 2.5e-19; Matches 61; Conservative 48; Mismatches 57; Indels 18; Gaps 4; | QY 9 INFTTAGATVQSYTNFIRAVRGRLTNRVGLPINQRFILVELSNHAELSVT 58 | QY 59 LALDVINAYVVGYRAGNSAYFFHPDNQEDAEALTHLFTDVQNRYTFAFGGNYDRLEQLAG 118 | Qy 119 NLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRTR 178 | Qy 179 IRYN 182 | Db 175 IPKN 178 | RESULT 14 S22044 NAN Wedyorsidase (EC 3.2.2.2) alpha-luffin precursor - smooth loofah NAN Wedyorsidase (EC 3.2.2.2) alpha-luffin precursor - smooth loofah NAN Lernate names protein synthesis inhibitor; ribosome-inactivating protein luffin-A Cipters: Lift and old sequence of the smooth loofah NAN CHARGASHA (1872) NAN CHARGA | |

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; Mikhailov, A.; Stoeva, S.; Betzel, C.; Voelter, W. 7, 367-372, 1998
lecular modeling of mistletoe lectin I from Viscum album 98308123; PMID:9642133
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29.0%; Score 276; DB 2; Length 277;
Best Local Similarity 33.3%; Pred. No. 5.7e-18;
Matches 62; Conservative 42; Mismatches 62; Indels 20; Gaps

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GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
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OM protein - protein search, using sw model

February 10, 2004, 16:13:55; Search time 6.17124 Seconds (without alignments) 1409.756 Million cell updates/sec Run on:

US-10-083-336A-9 Title: Perfect score:

1 IFPKQYPIINFTTAGATVQS......ARFQYIEGEMRTRIRYNRRS 185 Sequence:

BLOSUM62 Scoring table:

127863 segs, 47026705 residues Gapop 10.0 , Gapext 0.5

Searched:

Total number of hits satisfying chosen parameters:

seq length: 0 seq length: 200000000 Minimum DB Maximum DB

Listing first 45 summaries Post-processing: Minimum Match 0% Maximum Match 100%

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SUMMARIES

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| % Query Match | 98.3 | 6.88 | 35.5 | 34.4 | 33.3 | 33.3 | 32.8 | 32.2 | 31.6 | 30.6 | 30.5 | 29.8 | 29.0 | 28.7 | 28.4 | 28.2 | 26.7 | 25.1 | 19.3 | 18.7 | 17.7 | 17.6 | 13.8 | 13.4 | 13.2 | 13.1 | 13.0 | 12.8 | 12.1 | ä | 11.5 | 11.4 | 10.5 |
| Score | 934.5 | 845 | 337.5 | 327.5 | 317 | 316.5 | 312 | 306 | 300.5 | 291 | 290 | 283 | 276 | 272.5 | 270.5 | 268.5 | 253.5 | 239 | 184 | 177.5 | 168.5 | 167 | 131.5 | 127.5 | 'n | 4 | ᅥ | 121.5 | | Н | 109.5 | 08 | \circ |
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ALIGNMENTS

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RICI RICCO STANDARD; PRT; 576 AA.
P02879; P02880;
21-JU1-1986 (Rel. 01, Created)
113-AUG-1987 (Rel. 05, Last sequence update)
115-SEP-2003 (Rel. 42, Last annotation update)
115-SEP-2003 (Rel. 42, Last annotation update)
116-SEP-2013 (Rel. 42, Last annotation update)
116-SEP-2013 (Rel. 42, Last annotation update)
116-SEP-2013 (Rel. 42, Last annotation update)
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116-SEP-2013 (Rel. 42, Last annotations (Castor bean).
117-SEP-2013 (Rel. 42, Last annotations (Castor bean).
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119-SEP-2013 (Rel. 42, Last annotations (Castor bean).
129-SEP-2013 (Rel. 42, Last annotations (Castor bean).
139-SEP-2013 (Rel. 42, Last annotations (Castor bean).
140-SEP-2013 (Rel. 42, Last annotations (Castor bean).
150-SEP-2013 (Rel. 42, Last annotations (Castor bean).
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170-SEP-2013 (Rel. 42, Last annotations (Castor bean).
180-SEP-2013 (Rel. 42, Last annotations (Castor bea
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"The lectin gene family of Ricinus communis: cloning of a functional
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-90344223; PubMed-1368517;
Kimura Y., Kusuoku H., Tada M., Takagi S., Funatsu G.;
"Structural analyses of sugar chains from ricin A-chain variant.";
Agric. Biol. Chem. 54:157-162(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
MEDLINE=86067214; PubMed=2999712;
Halling K.C., Halling A.C., Murray E.E., Ladin B.F., Houston L.L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Genomic cloning and characterization of a ricin gene from Ricinus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE OF 12-576 FROM N.A.
MEDLINE=85179479; PubMed=3838723;
Lamb A., Roberts L.M., Lord J.M.;
"Nucleotide sequence of cloned cDNA coding for preproricin.";
Bur. J. Blochem. 148:265-270(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE OF 36-302.
Yoshitake S., Funatsu G., Funatsu M.;
"Isolation and sequences of peptic peptides, and the complete sequence of Ile chain of ricin-D.";
Agric. Biol. Chem. 42:1267-1274(1978).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CARBOHYDRATE-LINKAGE SITES, AND PARTIAL SEQUENCE.
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"Primary structure of Ala chain of ricin D.";
Agric. Biol. Chem. 43:2221-2224(1979).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ricin gene and three lectin pseudogenes.";
plant Mol. Biol. 18:515-525(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Nucleic Acids Res. 13:8019-8033(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REVIEW. MEDLINE=21480122; PubMed=11595634; Olsnes S., Kozlov J.V.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=92163016; PubMed=1371405;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE OF 315-576.
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RESULT 1
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MEDILINE=93165632; PubMed=1287657;

Xin Y., Robertus J.D.;

Xin Y., Robertus J.D.;

Xin Y., Robertus J.D.;

Xin Y., Robertus J.D.;

"Manalysis of Several Key active site residues of ricin A chain by

"matagenesis and X-ray crystallography.";

Drotein Eng. 5:775-779(1992).

-!-FUNCTION: Ricin is highly toxic to animal cells and to a less extent to plant cells. The A chain is responsible for inhibiting protein synthesis through the catalytic inactivation of 605 ribosomal subunits. It acts as a glycosidase that removes a specific adenine residue from an exposed loop of 288 ribosomal RNA. As this loop is involved in the binding of elongation sporthesis. The A chain can inactivate a few thousand ribosomes per minute, thus inactivating them faster than the cell can make new ones. A single A-chain molecule can therefore kill an animal cell. The B chain binds to cell receptors and facilitates the entry into the cell of the A chain; B chains are also responsible for contractive and statistic cell agolithmian molecule. It is binds to beta-D-
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SUBDIAT: Disulfided-linked dimer of A and B chains.
DOMAIN: The B chain is composed of two domains, each domain consists of 3 homologous subdomains (alpha, beta, gamma).
PTM: THE MAJOR A-CHAIN IS GLYCOSYLARTED ONLY IN POSITION 45 AND THE MINOR A-CHAIN IS GLYCOSYLARED ALSO IN POSITION 271.
SIMILARITY: IN THE N-TERMINAL SECTION; BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY: TYPE 2 RIP SUBFAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "X-ray structure of recombinant ricin A-chain at 1.8-A resolution.";
                                                                                                                                                      MEDLINE-87165983; PubMed-3558397;
Monfort W., Villafranca J.E., Monzingo A.F., Ernst S.R., Katzin B.,
Rutchber E., Xuong N.H., Hamilin R., Robertus J.D.;
"The three-dimensional structure of ricin at 2.8 A.";
J. Biol. Chem. 262:5398-5403(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE=96374222; PubMed=8780513; Day P.J., Ernst S.R., Frankel A.E., Monzingo A.F., Pascal J.M., Molina-Svinth M.C., Robertus J.D.; "Structure and activity of an active site substitution of ricin A "Structure and activity of an active
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                X-TAX CRYSTALLOGRAPHY (2.5 ANGSTROMS) OF A-CHAIN.
MEDLINE=97240820; PubMed=9086280;
Yan X., Hollis T., Svinth M., Day P., Monzingo A.F., Milne G.W.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Weston S.A., Tucker A.D., Thatcher D.R., Derbyshire D.J., Pauptit R.A.;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=91352005; PubMed=1881882;
Rutenber B., Robertus J.D.;
"Structure of ricin B-chain at 2.5-A resolution.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        X-RAY CRYSTALLOGRAPHY (1.8 ANGSTROMS) OF A-CHAIN.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE-91352004; PubMed-1881881;
Katzin B.J., Collins E.J., Robertus J.D.;
"Structure of ricin A-chain at 2.5 A.";
                                                                                                                                        K-RAY CRYSTALLOGRAPHY (2.8 ANGSTROMS).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=95082010; PubMed=7990130;
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"Ricin.";
Toxicon 39:1723-1728(2001).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Proteins 10:260-269(1991).
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                                                                           This SWISS-PROT entry is copyright. It is produced through a collaboration
SIMILARITY: Contains 2 ricin B-type lectin domains.

CAUTION: REF.4 AND REF.5 SEQUENCES HAVE A HIGH NUMBER OF CONFLICTS
WITH THE SEQUENCE TRANSLATED FROM DNA (REF.1, REF.2 AND REF.3).
                                                                                                                                                                                                                                                                                                                                                                                                                                                      PROSITE; PS50231; RICIN B LECTIN; 2.
PROSITE; PS00275; SHIGA_RICIN; 1.
Plant defense; Hydrolase; Protein synthesis inhibitor; Toxin; Repeat; Glycoprotein; Lectin; Signal; 3D-structure.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /FTId=CAR 000080.

N-LINKED (GLCNAC. .) (IN MINOR FORM).
FTID=CAR 000081.

N-LINKED (GLCNAC. .).
                                             NOTE=Issue 31 of February 2003;
WWW="http://www.expasy.org/spotlight/articles/sptlt031.html".
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N-LINKED (GLCNAC. . .).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RICIN B CHAIN.
RICIN B-TYPE LECTIN 1.
RICIN B-TYPE LECTIN 2.
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-> R (IN REF. 3).
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LINKER PEPTIDE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                INTERCHAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1-ALPHA.
1-BETA.
                       WITH THE SEQUENCE TRANSLATED FROM -!- DATABASE: NAME=Protein Spotlight;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2-ALPHA.
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InterPro; IPR000772; Ricin B lectin.
InterPro; IPR001574; RIP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -BETA
                                                                                                                                                                                                                                                                                                                                                                                                             Pfam; PF00652; Ricin B lectin; 6. Pfam; PF00161; RIP; 1.
                                                                                                                                                                 EMBL, X03179; CAA26939.1; -. EMBL, X52908; CAA37095.1; -. EMBL; X02389; CAA26230.1; -. EMBL, A12892; CAA01058.1; -.
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478
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11FU; 14-JAN-98.
1RTC; 31-OCT-93.
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1FMP; 31-OCT-93.
1IFS; 14-JAN-98.
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PDB; 11L9; 16-JAN-02.
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                                                                                                                                                                                                                                                                                                  10BS; 16-JUN-97.
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This SWISS-PROT entry is copyright. It is produced through a collaboration
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GNYDRIEGLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 215
                                                                                                                                                                                                                                                                 48 ELSNHAELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFIDVQNRYTFAFG 107
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Lin T.T.-S., Li S.S.-L.;
Lin T.T.-S., Li S.S.-L.;
Lin T.T.-S., Li S.S.-L.;

"purification and physicochemical properties of ricins and agglutinins from Ricinus communis.";

Bur. J. Biochem. 105:453-459 (1980).

-:- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at one
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Řičinus communis (Castor bean).
Bukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta;
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots, Rosidae,
eurosids I, Malpighales, Euphorbiaceae, Ricinus.
                                                                                                                                                                                      36 IFPRQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
                                                                                                                                       ----NRVGLPINORFILV
                                                                Gaps
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-!- SIMILARITY: IN THE N-TERMINAL SECTION; BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY. TYPE 2 RIP SUBFAMILY.
-!- SIMILARITY: Contains 2 ricin B-type lectin domains.
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The complete amino acid sequence of the B-chain of the Ricinus
communis agglutinin isolated from large-grain castor bean seeds.";
Biochim. Biophys. Acta 872:277-285(1986).
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28-FEB-2003 (Rel. 41, Last annotation update)
Agglutinin precursor (RCA) (Contains: Agglutinin A chain (rRNA N-glycosidase) (EC 3.2.2.2); Agglutinin B chain].
Ricinus communis (Castor bean).
                                                            13;
DB 1; Length 576;
                                                                   Indels
Score 934.5; DB 1
Pred. No. 6.9e-80;
0; Mismatches 0
                                                                                                                                    1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     216 FOYIEGEMRTRIRYNRRS 233
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01-JAN-1988 (Rel. 06, Last seq.
28-FEB-2003 (Rel. 41, Last anno
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   98.3%;
93.4%;
                                                                           Matches 185; Conservative
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                                       Similarity
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P06750;
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48 ELSNHABLSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDABAITHLFTDVQNRYTFAFG 107
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                                                                               SMÄRT; SM00458; RICIN; 2.
PROSITE; PSS0231; RICIN B LECTIN; 2.
PROSITE; PS00275; SHIGA RICIN; 1.
Plant defense; Hydrolase; Protein synthesis inhibitor; Toxin; Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  14; Gaps
                                                                                                                                                                                                                                                                                                                           (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                     (POTENTIAL)
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01-NOV-1990 (Rel. 16, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Ribosome-inactivating protein alpha-trichosanthin precursor (rRNA N-Glycosidase) (EC 3.2.2.22) (Alpha-TCS).
Trichosanthes kirilowii (Mongolian snake-gourd).
                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 564;
                                                                                                                                                                                                                                                                                                                                                                                                                           Score 845; DB 1; Leng...
... No. 1.6e-71;
8; Indels
                                                                                                                                                                                                                                                                                                                                                                   F -> T (IN REF. 2).
R -> D (IN REF. 2).
R -> G (IN REF. 2).
F -> T (IN REF. 2).
F -> V (IN REF. 2).
F -> V (IN REF. 2).
W, D455F2A72F609759 CRC64;
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INTERCHAIN (BY SIMILARITY).
BY SIMILARITY.
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N-LINKED (GLCNAC. ..)
N-LINKED (GLCNAC. ..)
                                                                                                                                                                AGGLUTININ B CHAIN.
RICIN B-TYPE LECTIN 1.
RICIN B-TYPE LECTIN 2.
1-ALPHA.
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LINKER PEPTIDE.
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BY SIMILARITY.
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2-ALPHA.
2-BETA.
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         HSSP, P02879; 1BR6.
GlycoSulteDB; P06750; -.
InterPro; IPR000772; Ricin_B_lectin.
InnerPro; IPR001574; RIP.
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                                                Pfam; PF00652; Ricin B lectin; 6. Pfam; PF00161; RIP; I. PRINTS; PR00396; SHIGARICIN.
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                                                                                                                                                                                                                                                                                                                                                                                                                         62851 MW;
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85.4%;
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Matches 169; Conservative
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361
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564 AA;
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SIGNAL
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CARBOHYD
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X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS).

MEDLINE=95344383; PubMed=7619070;

MEDLINE=95344383; PubMed=7619070;

MEDLINE=95344383; PubMed=7619070;

MEDLINE=95344383; PubMed=7619070;

"Studies on crystal structures, active-centre geometry and depurinating mechanism of two ribosome-inactivating proteins.";

Biochem. J. 309:288-298(1995).

-! - FUNCTION: TRICHOSANTHIN IS AN ABORTION-INDUCING PROTEIN. IT IS CAPABLE OF INMIBITING HIV-1 INFECTION AND REPLICATION. IT INACTIVATES EUKARYOTIC 60S RIBOSOMAL SUBUNITS.

-! - CAPABLE OF CATIVITY: Endchydrolysis of the N-glycosidic bond at one specific adenosine on the 28S FRNA.

-! - SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.

TYPE 1 RIP SUBFAMILY.
                                                                                                                                                                                                                                                                                      Chow T., Feldman R.A., Lovett M., Piatak M.;
"Isolation and DNA sequence of a gene encoding alpha-trichosanthin, a type I ribosome-inactivating protein.";
"I biol. Chem. 265:8670-8674 (1990).
Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Cucurbitales; Cucurbitaceae; Trichosanthes.
NCBI_TaxID=3677;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TISSUE=Tuberous root; Wang Y., Qian R.Q., Xia Z.X., Tian G.Y., Ni C.Z., Tian G.Y., Ni C.Z., Schentific evaluation of Tian Hua Fen (THF): history, chemistry and application.";
                                                                                                                                                                                                                                                                                                                                                                                                                            Collins E.J., Robertus J.D., Lopresti M., Stone K.L., Williams K.R., Wu P., Hwang K., Piatak M.;
"Primary amino acid sequence of alpha-trichosanthin and molecular models for abrin A-chain and alpha-trichosanthin.";
J. Biol. Chem. 265:8665-8669(1990).
                                                                                                             STRAIN=Maximowicz;
MBDINES=9115367; PubMed=1999291;
Shaw P.C., Yung M.H., Zhu R.H., Ho W.K.K., Ng T.B., Yeung H.W.;
"Cloning of trichosanthin cDNA and its expression in Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=94344957; PubMed=8066085; Dan K.; Lin Y., Pan K.; Shou P., Fu Z., Chen M., Lin Y., Pan K.; Structure of trichosanthin at 1.88-A resolution."; Proteins 19:4-13(1994).
                                                                                                                                                                                                                                                                                                                                                                                           STRAIN=Maximowicz; TISSUE=Tuberous root;
MEDLINE=90256789; PubMed=2341399;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   X-RAY CRYSTALLOGRAPHY (1.88 ANGSTROMS).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pure Appl. Chem. 58:789-798(1986).
                                                                                                                                                                                                                                                     STRAIN=Maximowicz; TISSUE=Leaf;
MEDLINE=90256790; PubMed=2341400;
                                                                                                                                                                                                    Gene 97:267-272(1991).
                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE OF 24-270.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE OF 24-270.
                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                            SEQUENCE FROM N.A.
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Gaps
                        PRINTS; PR00396; SHIGARICIN.
PROSITE; PS002775; SHIGA RICIN; 1.
Plant defense; Antivital; Protein synthesis inhibitor; Hydrolase;
Toxin; Signal; 3D-structure.
                                                       RIBOSOME-INACTIVATING PROTEIN ALPHA-
                                                                                                                                                                                                                                                                                                                                                                                                                                               19;
                                                                                                                                                                                                                                                                                                                                                                                                                                  35.5%; Score 337.5; DB 1; Length 289; 39.0%; Pred. No. 2.2e-24; Arive 42; Mismatches 50; Indels 19,
                                                                                         | 1 -> L (IN REF. 4).
| V -> VDAGLERNAVL (IN REF. 4).
| K -> GL (IN REF. 4).
| K -> LWL (IN REF. 4).
| WS -> LWL (IN REF. 4).
| Q -> T (IN REF. 4).
| G -> T (IN REF. 2).
| MISSING (IN REF. 2).
| MISSING (IN REF. 2).
| T -> M (IN REF. 2).
                                                                                                                                                                                                                                                                                                                                                                                                                      31676 MW; 5CE09BB630575BB9 CRC64;
                                                            TRICHOSANTHIN.
MISSING IN MATURE PROTEIN
BY SIMILARITY.
                                                                              IPLL -> LPLI (IN REF. 4)
MISSING (IN REF. 4)
PDB; INLI; 21-JAN-03.
PDB; 1QD2; 24-APR-00.
InterPro; IPR001574; RIP.
Pfam; PF00161; RIP; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                     241
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289 AA;
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Matches 71; Conserv
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or send an email to license@isb-sib.ch).

EMBL; M34658; AAA34207.1; -.
EMBL; J05434; AAA34206.1; -.
PIR, JT0566; RLTZT.
PDB; 1MRJ; 07-FEB-95.
PDB; 1MRX; 07-FEB-95.
PDB; 1TCS; 10-JUL-95.
PDB; 1J4G; 28-JAN-03.

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                                                                                                  118 GNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRT 177
                                                                                                                                                                          59 LALDVTNAYVVGYRAGNSAYFFHPDNQEDA-EAITHLFTDVQNRYTFAFGGNYDRLEQLA 117
INFTTAGATVQSYTNFIRAVRGRLTN------RVGLPINQRFILVELSNHAELSVT 58
                      SFRISGATSSSYGVEISNIRKALPNERKLYDIPLLRSSLPGSQRYALIHLTNYADETIS 84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TISSUE=Root tuber;
MEDLINE=9755652; PubMed=9212998;
MIZULkami H., Ida K., Kondo T., Ogihara Y.;
Mizukami H., Ando T., Ogihara Y.;
"Cloning and bacterial expression of a gene encoding ribosome-inactivating proteins, karasurin-A and karasurin-C, from Trichosanthes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Chem. Pharm. Bull. 39:1244-1249(1991).

-!- FUNCTION: ABORTION-INDUCING PROTEIN. IT INACTIVATES EUKARYOTIC

-()- FUNCTION: ABORTION-INDUCING PROTEIN.

-()- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at one specific adenosine on the 28S rRNA.

-()- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.

TYPE 1 RIP SUBFAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots, Rosidae,
eurosids I, Cucurbitales, Cucurbitaceae, Trichosanthes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HSSP, P09989; 1MRJ.
InterPro; IPR001574; RIP.
Pfam; PF00161; RIP, 1.
PRINTS; PR00396; SHIGARICIN.
PROSITE; PS00275; SHIGARICIN, 1.
PROSITE; PS00275; HIGARICIN, 1.
Plant defense; Antiviral; Protein synthesis inhibitor; Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Toyokawa S., Takeda T., Kato Y., Wakabayashi K., Ogihara Y.;
"The complete amino acid sequence of an abortifacient protein,
                                                                                                                                                                                                                                                                                                                                                                                                                15-DEC-1998 (Rel. 37, Last sequence update)
28-FEB-2003 (Rel. 41, Last amnotation update)
Ribosome-inactivating protein karasurin precursor (rRNA N-glycosidase) (EC 3.2.2.2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Trichosanthes kirilowii (Mongolian snake-gourd)
                                                                                                                                                                                                                                                                                                                                                                289 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 POTENTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     kirilowii var. japonica.";
Biol. Pharm. Bull. 20:711-713(1997).
                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=92005921; PubMed=1914000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL; AB000666; BAA21786.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                      Created)
                                                                                                                                                                                                                                                                                                                                                              STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21
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PIR; JU0393; JU0393.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=3677;
                                                                                                                                                                                                                                                                  197 RV 198
                                                                                                                                                                                                                              178 RI 179
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P24478;
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                                                                                                                                                                                                                                                                            59 LALDVTNAYVVGYRAGNSAYFFHPDNQEDA-EAITHLFTDVQNRYTFAFGGNYDRLEQLA 117
                                                                                                                                                                                                                                                                                                  118 GNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISBAARFQYIEGEMRT 177
                                                                                                                                                                                                                                                                                                                                                                            25 VSFRLSGATSSSYGVFISNLRKALPYBRKLYDIPLLRSTLPGSQRYALIHLTNYADBTIS 84
                                                                                                                                                                                                9 INFITAGATVQSYTNFIRAVRGRLTN------RVGLPINQRFILVELSNHABLSVT 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EUT. J. Biochem. 198:723-732(1991).

-i- FUNCTION: THE A CHAIN IS RESPONSIBLE FOR INHIBITING PROTEIN

SYNTHESIS THROUGH THE CATALYTIC INACTIVATION OF 60S RIBOSOMAL

SYNTHESIS THROUGH THE CATALYTIC INACTIVATION OF 60S RIBOSOMAL

SUBUNITS BY REMOVING ADENINE FROM POSITION 4,324 OF 28 S RRNA. THE

B CHAIN IS A GALACTOSE-SPECIFIC LECTIN THAT FACILITATES THE

BINDING OF ABRIN TO THE CELL MEMBRANE THAT PRECEDES ENDOCYTOSIS.

-i- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at one
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Wood K.A., Lord J.M., Wawrzynczak E.J., Piatak M.; "Preproabrin: genomic cloning, characterisation and the expression of the A-chain in Escherichia coli.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Abrus precatorius (Indian licorice) (Crab's eye).
Bukaryota, Viridiphantae, Streptophyta; Bmbryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Rabales; Rabaceae; Papilionoideae; Abreae; Abrus.
                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       epecific adenosine on the 288 irna.
-- SUBUNT: DISULFIDE-LINKED DIMER OF A AND B CHAINS.
-- DOMAIN: THE B CHAIN IS COMPOSED OF TWO DOMAINS, EACH DOMAIN
CONSISTS OF 3 HOMOLOGOUS SUBDOMAINS (ALPHA, BETA, GAMMA).
-- SIMILARITY: IN THE N-TERMINAL SECTION, BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY: TYPE 2 RIP SUBFAMILY.
-- SIMILARITY: Contains 2 ricin B-type lectin domains.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-DEC-1992 (Rel. 24, Created)
01-DEC-1992 (Rel. 24, Last sequence update)
01-DEC-1992 (Rel. 41, Last annotation update)
Abrin-c precursor [Contains: Abrin-c A chain (rRNA N-glycosidase)
(EC 3.2.2.2); Abrin-c B chain]
                                                                                                                                                           19;
                                                                                                                34.4%; Score 327.5; DB 1; Length 289; 39.0%; Pred. No. 1.9e-23;
                                                                                                                                                           50; Indels
                      KARASURIN-A.
REMOVED IN MATURE FORM.
BY SIMILARITY.
883D3E3242887B26 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             562 AA
                                                                                                                                                           42; Mismatches
  KARASURIN-C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=91266957; PubMed=2050149;
270 KA
270 KA
289 RE
183 BY
31704 MW;
                                                                                                                                                           71; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
  22
24
27
271
183
183
289 AA;
                                                                                                                                       Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NCBI_TaxID=3816;
                                                                                                                                                                                                                                                                                                                                                                                                                                      178 RI 179
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P28590;
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EMBL; X55667; CAA39202.1; -. PIR; S16022; S16022.

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54 ELSVTLALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRL 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5 QYPIINFTTAGATVQSYTNFIRAVRGRLTNRV--GLPI------NQRFILVELSNHA 53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ABRB ABRRR STANDARD; PRT; 527 AA.

Q06077; P81374;

15-DEC-1998 (Rel. 37, isst sequence update)
15-DEC-1998 (Rel. 37, isst sequence update)
28-FEB-2003 (Rel. 41, isst annotation update)
28-FEB-2013 (Rel. 41, isst annotation update)
Abrin-b precursor (Contains: Abrin-b A chain (rRNA N-glycosidase)
(RC 3.2.221; Abrin-b B chain)
Abrus precatorius (Indian licorice) (Crab's eye).

Rukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; endicotyledons; core eudicots; Rosidae; eurosids 1; Fabales; Fabaceae; Papilionoideae; Abreae; Abrus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   114 EQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     35 ÓDQVÍKFTTEGATSÓSÝKQFÍEALRORLTGGLIHDIPVLPDPTTVEERNRYÍTVELSNSE
                                                                                                            PROSITE; PSS0231; RICIN B LECTIN; 2.
PROSITE; PS00275; SHIGA_RICIN; 1.
Plant defense; Hydrolase; Protein synthesis inhibitor; Toxin; Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                66; Indels 18; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                          (BY SIMILARITY).
N-LINKED (GLCNAC. ..) (POTENTIAL).
N-LINKED (GLCNAC. ..) (POTENTIAL).
N-LINKED (GLCNAC. ..) (POTENTIAL).
                                                                                                                                                  Lectin, Signal; Pyrrolidone carboxylic acid.

1 34 BY SIMILARITY).

86 295 ARRIN C A CHAIN (BY SIMILARITY).

96 562 ABRIN C B CHAIN (BY SIMILARITY).

97 434 RICIN B-TYPE LECTIN 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   33.3%; Score 317; DB 1; Length 562; 42.8%; Pred. No. 4.1e-22;
                                                                                                                                                                                                                                                                                                                                           INTERCHAIN (BY SIMILARITY).
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
PYRROLIDONE CARBOXYLIC ACID
(BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -LINKED (GLCNAC. . .) (PC IFDOABC7D7BA6278 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               42.8%; Pred. ...
tive 23; Mismatches
                                                                                                                                                                                                                                                                                                                                     BY SIMILARITY
HSSP; P11140; 1ABR.
InterPro; IPR000772; Ricin_B_lectin.
InterPro; IPR001574; RIP.
Pfam; PF00652; Ricin_B_lectin; 6.
Pfam; PF00161; RIP; 1.
                                                                                                                                                                                                                                                                                             2-ALPHA.
2-BETA.
                                                                                                                                                                                                                                                   1-ALPHA.
                                                                                                                                                                                                                                                                                1-GAMMA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62817 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  80; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                 234 2
395 3
435 4
562 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity
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                                                                                                                                                        Glycoprotein;
SIGNAL
                                                                                                                                                                                                                                                                                                                                     ACT SITE
DISULFID
DISULFID
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DISULFID
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SEQUENCE FROM N.A.

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R PIR; 532430; 532430.

R PIR; 532430; 532430.

R PIR; 532430; 532430.

R PIR; 532430; 532430.

R PIR; 532430; 532430.

R PIR; 532430; 532430.

R PRODIT: PRO01574; RIP.

R PFam; PF00161; RIP; IA.

R PRONTS; PR00396; SHIGALICIN.

R PROSITE; PS00231; RICIN 2.

R PROSITE; PS00231; RICIN B LECTIN; 2.

R PROSITE; PS00275; SHIGA RICIN; 1.

R PLATI defense; Hydrolase; Protein synthesis inhibitor; Toxin; Repeat; GHAIN

CHAIN

T PEPTIDE 251 260 LINKER PEPTIDE.
                                                                                                                       TISSUB=Seed;

X MEDLINE=93169023; PubMed=7763422;

Kimura M., Sumizawa T.; Funatsu G.;

Kimura M., Sumizawa T.; Funatsu G.;

Kimura M., Sumizawa T.; Funatsu G.;

Ximura M., Sumizawa T.; Funatsu G.;

The complete amino acid sequences of the B-chains of abrin-a and abrin-b, toxic proteins from the seeds of Abrus precatorius.";

Biosci. Biotechnol. Biochem. 57:166-1691933).

-!- FUNCTION: THE A CHAIN IS REPONSIBLE FOR INHIBITING PROTEIN SYNTHESIS THROUGH THE CATALYTIC INACTIVATION OF 60S RIBOSOWAL SYNTHESIS THROUGH THE CATALYTIC INACTION 4,324 OF 28 S RRNA. ABRIN-A IS MORE TOXIC THAN RICIN.

-!- FUNCTION: THE B CHAIN IS A GALACTOSE-SPECIFIC LECTIN THAT PROCEEDES ENDOCYTOSIS.

-!- FUNCTION: THE B CHAIN IS A GALACTOSE-SPECIFIC LECTIN THAT PROCEEDES ENDOCYTOSIS.

-!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at one specific adenosine on the 28S FRNA.

-!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at CONSISTS OF 3 HOMOLOGOUS SUBDOMAINS (ALPHA, BETA, DAMAIN).

-!- DOWALN: THE B CHAIN IS COMPOSED OF TWO DOMAINS, EACH DOMAIN CONSISTS OF 3 HOMOLOGOUS SUBDOMAINS (ALPHA, BETA, GAMMA).

-!- SIMILARITY: IN THE N-TERMINAL SECTION; BELONGS TO THE RIBOSOME-

-!- SIMILARITY: COLTAINS 2 FICIN B-type lectin domains.
                                                                                                                                                                                                                                                                                                                                                                  one
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INTERCHAIN (BY SIMILARITY).

BY SIMILARITY.

BY SIMILARITY.

BY SIMILARITY.

BY SIMILARITY.

PYRROLIDONE CARBOXYLIC ACID (BY SIMILARITY).

N-LINKED (GLCNAC. . ) (POTENTIAL).

N-LINKED (GLCNAC. . ) (POTENTIAL).

N-LINKED (GLCNAC. . ) (POTENTIAL).

N-LINKED (GLCNAC. . ) (POTENTIAL).

N-LINKED (GLCNAC. . ) (POTENTIAL).

N-LINKED (GLCNAC. . )
MEDLINE=93132798; PubMed=8421313;
Hung C.-H., Lee M.-C., Lee T.C., Lin J.-Y.;
Pyrimary Structure of three distinct isoabrins determined by CDNA sequencing. Conservation and significance.";
J. Mol. Biol. 229:263-267(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ABRIN-B B CHAIN.
RICIN B-TYPE LECTIN
RICIN B-TYPE LECTIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1-GAMMA.
2-ALPHA.
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2-GAMMA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1-BETA.
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360
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282
                                                                                                            SEQUENCE OF 260-527.
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                                                                                                                                                                                                                                                                                          EQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEG 173
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                                                                                                                                                                                                                          1 ODQVIKFTTEGATSOSYKOFIEALRORLTGGLIHGIPVLPDPTTLOERNRYISVELSNSD
                                                                                                                                                                                                                                                                      61 TESIEAGIDVSNAYVAYRAGNRSÝFL---RDAPTSASRYLFTGTÓ-QYSLRFNGSYIDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Engrayota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids I; Cucurbitales; Cucurbitaceae; Bryonia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               immunoconjugates.";
Bioconj. Chem. 5:423-429(1994).
Bioconj. Chem. 5:423-429(1994).
-!- FUNCTION: RIBOSOME-INACTIVATING PROTEIN OF TYPE 1, INHIBITS
-!- FUNCTION: RIBOSOME-INACTIVATING PROTEIN SYNTHESIS IN ANIMAL CELLS (BY SIMILARITY).
-!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at on specific adenosine on the 28S rRNA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
TYPE 1 RIP SUBFAMILY.
                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Siegall C.B., Gawlak S.L., Marquardt H.;
"Bryodin 2 a ribosome-inactivating protein isolated from the plant
Bryonia dioica.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Characterization of ribosome-inactivating proteins isolated from
                                                                                                                                                                                 23; Mismatches 66; Indels 19;
                                                                                                                                                              DB 1; Length 527;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=95151812; PubMed=7849072;
Siegall C.B., Gawlak S.L., Chace D., Wolff B.A., Mixan B.,
                                                                                                                                                                                                                                                                                                                                                                                                                                  16-OCT-2001 (Rel. 40, Created)
16-OCT-2001 (Rel. 40, Last sequence update)
18-OCT-2003 (Rel. 41, Last annotation update)
Ribosome-inactivating protein bryodin II precursor (rRNA)
glycosidase) (EC 3.2.2.22) (BD2).
D -> N (IN REF. 2).

AE -> PO (IN REF. 2).

S -> N (IN REF. 2).

Y -> D (IN REF. 2).

Y -> D (IN REF. 2).

N -> S (IN REF. 2).

N -> S (IN REF. 2).

N -> S (IN REF. 2).

N -> S (IN REF. 2).

N -> S (IN REF. 2).

N -> S (IN REF. 2).

N -> S (IN REF. 2).

H -> Y (IN REF. 2).

H -> Y (IN REF. 2).

H -> Y (IN REF. 2).

H -> T (IN REF. 2).

H -> T (IN REF. 2).

H -> T (IN REF. 2).

H -> T (IN REF. 2).
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                                                                                                                                                                                                       5 QYPIINFTTAGATVQSYTNFIRAVRGRLTNRV--GLPI-
                                                                                                                                                                         4.3e-22;
                                                                                                                                                                                                                                                                                                                                                                                                              282 AA.
                                                                                                                                                             Score 316.5;
                                                                                                                                                                         Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Patent number US5597569, 28-JAN-1997.
                                                                                                                                                                                                                                                                                                                                                                                                               PRT;
                                                                                                                                           59114 MW;
                                                                                                                                                               33.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bryonia dioica (Red bryony)
                                                                                                                                                                         42.98;
                                                                                                                                                                                  81; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                               STANDARD;
   291
351
378
378
426
4831
491
502
508
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  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 22-42.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=3652;
                                                                                                                                                                                                                                                                                                                                                                                                               RIP2 BRYDI
P98184; Q9S8J0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Marquardt H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TISSUE=Root
                                                                 CONFLICT
                                           CONFLICT
             CONFLICT
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This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    56 SVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQ 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     82 SVIVALDVVNVVVVAYRAGNIAYFL---ADASTEANNVLFAGI-NHVRLPYGGNYDGLET 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  24 INFSLIGATGATYKTFIRNLRTKLT--VGTPRVYDIPVLRNAAAGLARFQLVTLTNYNGE 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     116 LAGNL-RENIELGNGPLEEAISALYYYSTGGTOLPTLARSFIICIQMISEAARFQYIE 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Van Damme E.J., Barre A., Rouge P., Van Leuven F., Peumans W.J.; "Characterization and molecular cloning of Sambucus nigra agglutinin V (nigrin b), a GalNAc-specific type-2 ribosome-inactivating protein from the bark of elderberry (Sambucus nigra)."; Bur. J. Biochem. 237:505-513(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9 INFTTAGATVQSYTNFIRAVRGRLTNRVG-----LPINQ------RFILVELSNHAEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RIBOSOME-INACTIVATING PROTEIN BRYODIN II.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDILINE=94003077; PubMed=8400135;
Girbes T., Citores L., Ferreras J.M., Rojo M.A., Iglesias R.,
Munoz R., Arias F.J., Calonge M., Garcia J.R., Mendez E.;
Munoz R., Arias F.J., Calonge M., Garcia J.R., Mendez E.;
Isolation and partial characterization of nigrin b, a non-toxic
novel type 2 ribosome-inactivating protein from the bark of Sambucus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             nigra L.";
Plant Mol. Biol. 22:1181-1186(1993).
-!- FUNCTION: NON-TOXIC TYPE 2 RIP WHICH STRONGLY INHIBITS MAMMALIAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (Contains: Nigrin b A chain
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P33183; P33184; P93542;
P301-0CT-1993 (Rel. 27, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Nigrin b precursor (Agglutinin V) (SNAV) (Contains: Nigrin b A chai KrNA N-9lycosidase) (EC 3.2.2.22); Nigrin b B chain].
Sambucus nigra (European elder).
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -LINKED (GLCNAC. . .) (POTENTIAL).
C52BE2F6A873769C CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    24;
                                                                                                                                                                                                                                                                                                                                               InterPro; IPR001574; RIP.
Pfam; PF00161; RIP; 1.
PRINTS; PR00396; SHIGARICIN.
PROSITE; PS00275; SHIGA_RICIN; 1.
PROSITE; PS00275; SHIGA_RICIN; 1.
Plant defense; Protein Synthesis inhibitor; Hydrolase; Toxin; Multigene family; Glycoprotein; Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Asteridae; campanulids; Dipsacales; Adoxaceae; Sambucus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  32.8%; Score 312; DB 1; Length 282; 45.5%; Pred. No. 5.3e-22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 49; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    24; Mismatches
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HSSP; P09989; 1MRJ.
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MEDLINE=96215449; PubMed=8647092;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 183 183 B
25 25 N
282 AA; 30754 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE OF 26-49 AND 298-321.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        81; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     282
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CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIGNAL
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142 DNLETAANTRRESIELGPSPLDGAITSLYHGD-----SVARSLLVVIQMVSEAARFRY 194

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    53 AELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAI--THLFTDVQNRYTFAFGGNY 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6 YPIINFTTAGATVQSYTNFIRAVRGRLTNRV----GLP-----INQRFILVELSNH 52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     28 YPSVSFNLDGAKSATÝRDFLSNLRKTVATGTYEVNGLÞVLRRESEVQVKSRFVLVPLTNY 87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 88 NGNTVTLAVDVTNLYVVAFSGNANSYFF ----KDATEVQKSNLFVGTKQN-TLSFTGNY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  11 DRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQY
                                             THE
                                                                                                          CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at one
                                                                                                                                                                                                                                                                                                                                                                                                                                                    SMART; SM00458; RICIN; 2.
PROSITE; PS00275; SHIGA RICIN; 1.
PROSITE; PS50231; RICIN BLECTIN; 2.
Plant defense; Hydrolase; Protein synthesis inhibitor; Toxin; Repeat; Glycoprotein; Lectin; Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          28; Gaps
PROTEIN SYNTHESIS BUT DOES NOT AFFECT PLANT NOR BACTERIAL PROTEIN
                                                                                                                       specific adenosine on the 28S fRNA.
SUBUNIT: DISULFIDE-LINKED DIMER OF A AND B CHAINS.
SIMILARITY: IN THE N-TERMINAL SECTION; BELONGS TO THE RIBOSOME-INACTIVATING PROFER FAMILY. TYPE 2 RIP SUBFAMILY.
SIMILARITY: Contains 2 ricin B-type lectin domains.
           SYNTHESIS. THE A CHAIN IS RESPONDIBLE FOR INHIBITING PROTEIN SYNTHESIS THROUGH THE CATALYTIC INACTIVATION OF 60S RIBOSOWAL SUBUNITS BY REMOVING ADENINE FROM POSITION 4,324 OF 28 S. RRNA. B CHAIN IS A GALACTOSE-SPECIFIC LECTIN THAT FACILITATES THE BINDING OF NIGRIN B TO THE CELL MEMBRANE THAT PRECEDES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (POTENTIAL)
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INTERCHAIN (BY SIMILARITY).
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F250CBE24621BF14 CRC64;
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InterPro; IPR001574; RIP.
Pfan; PF00652; Ricin_B_lectin; 6.
Pfam; PF00161; RIP; I.
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Best Local Similarity 38.4.
Best And T3; Conservative
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                                                                                                                                                                                                                                                                                                                                                                       "Molecular, biological, and preliminary structural analysis of recombinant bryodin 1, a ribosome-inactivating protein from the plant
                                                                                                                                                                                                   Bryonia dioica (Red bryony).
Bukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta;
Spermatophyta, Magnoliophyta, eudicotyledons; core eudicots; Rosidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Montecucchi P.C., Lazzarini A.M., Barbieri L., Stirpe F., Soria M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cloning and expression of a gene encoding bryodin 1 from Bryonia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Characterization of ribosome-inactivating proteins isolated from
                                                                                                                                                                                                                                                                                                                                             Sawlak S.L., Neubauer M., Klei H.E., Chang C.Y.Y., Einspahr H.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "N^terminal sequence of some ribosome-inactivating proteins.";
Int. J. Pept. Protein Res. 33:263-267(1989).
                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A., AND X-RAY CRYSTALLOGRAPHY (2.1 ANGSTROMS).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Siegall C.B., Gawlak S.L., Chace D., Wolff E.A., Mixan B.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bryonia dioica and their utility as carcinoma-reactive
                                                                                                                                                                                                                                                        eurosids I; Cucurbitales; Cucurbitaceae; Bryonia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Patent number US5541110, 30-JUL-1996.
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171 IEGEMRTRIR 180
                            195 IEQEVRRSLQ 204
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RSSIS -> LRHXI (IN REF. 3).
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                                                                                                                 PRINTS; PR00396; SHIGARICIN.
PR0SITE; PS00275; SHIGA RICIN; 1.
Plant defense; Protein synthesis inhibitor; Hydrolase; Toxin;
3D-structure; Multigene family; Glycoprotein; Signal.
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or send an email to license@isb-sib.ch)
                              EMBL; 124020; -; NOT_ANNOTATED_CDS PIR; $16491; $16491.
                                                                                InterPro; IPR001574; RIP. Pfam; PF00161; RIP; 1.
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59 LALDVTNAYVVGYRAGNSAYFFHPDNQEDA-EAITHLFTDVQNRYTFAFGGNYDRLEQLA 117

9 INFTTAGATVQSYTNFIRAVRGRLTN-----RVGLPINQRFILVELSNHAELSVT 58 VSFRLSGATTTSYGVFIKNLREALPYERKVYNIPLLRSSISGSGRYTLLHLTNYADETIS 84

19;

54; Indels

44; Mismatches

65; Conservative

Best Local Similarity

Matches

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GNLRENIELGNGPLEEAISALYYYSTGGTOLPTLARSFIICIOMISEAARFQYIEGEMRT 177
                                                                                X-RAY CRYSTALLOGRAPHY (2.14 ANGSTROMS).

MEDLINE=9533188; PubMed=760890;

Tahirov T.H., Liav Y.-C., Chen Y.-L., Lin J.-Y.;

Tahirov T.H., Lia T.-H., Liav Y.-C., Chen Y.-L., Lin J.-Y.;

To regtal structure of abrin-a at 2.14 A.";

J. Mol. Biol. 250:354-367(1995).

-!- FUNCTION: THE A CHAIN IS RESPONSIBLE FOR INHIBITING PROTEIN STRUCHT THE A CHAIN IS RESPONSIBLE FOR INHIBITING PROTEIN STRUCHTS BY REMOYING ADENINE FROM POSITION 4,324 OF 28 S RENA-ABRIN-A IS MORE TOXIC THAN RICIN.

-!- FUNCTION: THE B CHAIN IS A GALACTOSE-SPECIFIC LECTIN THAT PACILITATES THE BINDING OF ABRIN TO THE CELL MEMBRANE THAT PRECEDES ENDOCYTOSIS.

-!- CATALYTIC ACTIVITY: Endohydrolygis of the N-9lycosidic bond at one
                                                                                                                                                                                                                                                                                                                                                                                                                  Abrus precatorius (Indian licorice) (Crab's eye).
Bukaryota, Vizidiplantae, Streptophyta; Bmbryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Fabales; Fabaceae; Papilionoideae; Abreae; Abrus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TISSUE-Seed;
Funatsu G., Taguchi Y., Kamenosono M., Yanaka M.;
"The complete amino acid sequence of the A-chain of abrin-a, a toxic
protein from the seeds of Abrus precatorius.";
Agric. Biol. Chem. 52:1095-1097(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          specific adenosine on the 28S IRNA.
-!- SUBUNIT: DISULFIDE-LINKED DIMER OF A AND B CHAINS.
-!- DOMAIN: THE B CHAIN IS COMPOSED OF TWO DOMAINS, EACH DOMAIN
CONSISTS OF 3 HOMOLOGOUS SUBDOMAINS (ALPHA, BETA, GAMMA).
-!- SIMILARITY: IN THE N-TERMINAL SECTION; BELONGS TO THE RIBOSOME-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=93132798; PubMed=8421313; Hung C.-H., Lee M.-C., Lee T.C., Lin J.-Y.; Primary structure of three distinct isoabrins determined by cDNA sequencing. Conservation and significance."; J. Mol. Biol. 229:263-267(1993).
                                                                                                                                                                                                                                                                                                P11140; P28589;
01.JUL.1989 (Rel. 11, Created)
01.JUN.1994 (Rel. 29, Last sequence update)
28.FEB-2003 (Rel. 41, Last annotation update)
Abrin-a precursor [Contains: Abrin-a A chain (rRNA N-glycosidase)
(EC 3.2.2.2); Abrin-a B chain]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Evengen G., Mathiesen A., Sundan A., "Direct molecular cloning and expression of two distinct abrin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=92371656; PubMed=1505674;
Chen Y.-L., Chow L.-P., Tsugita A., Lin J.-Y.;
The complete primary structure of abrin-a B chain.";
FEBS Lett. 309:115-118(1992).
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                                                                                                                                                                                                                                                                                STANDARD;
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EMBL; M99344; AAA32624.1; ALT INIT.

DR RMBL; X54872; -; NOT ANNOTAFED CDS.

PTR; S23429; TZLSA.

DR PDB; 1ARR; 07-FEB-95.

DR PDB; 1ARR; 07-FEB-95.

DR PDB; 1ARR; 07-FEB-96.

DR PDB; 1ARR; 07-FEB-96.

DR PDB; 1ARR; 07-FEB-96.

DR PDB; 1ARR; 07-FEB-96.

DR PDB; 1ARR; 07-FEB-96.

DR PGAN; PF000652; Ricin B_lectin; 6.

PROSITE; PS00274; RICIN; 1.

DR PRINTS; PR00396; SHIGARCIN.

SMART; SN00458; RICIN; 2.

PROSITE; PS00231; RICIN; 1.

DR PROSITE; PS00275; SHIGARCIN; 2.

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CYROLIDONE CARBOXYLIC ACID.
N-LINKED (GLCNAC...).
MISSING (BIN REF. 4).
MISSING (IN REF. 4).
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 INACTIVATING PROTEIN FAMILY. TYPE 2 RIP SUBFAMILY.
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RICIN B-TYPE LECTIN 1.
RICIN B-TYPE LECTIN 2.
1-ALPHA.
1-BETA.
2-ALPHA.
2-BETA.
2-GAMMA.
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30.6%; Score 291; DB 1; Length 528; 40.6%; Pred. No. 1e-19; tive 26; Mismatches 59; Indels
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Matches 76; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          59 LALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLAG 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          119 NLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRTR 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        120 KIREKIPLGFRALDSALTSIFHYDS-----TAAAAAFLVILQTTAEASRFKYIEGQIIER 174
                                                                                                              SVILALDVINAYVVGYRAGNSAYFFH--PDNQEDAEAITHLFIDVQNRYTFAFGGNYDRL 113
                                                                     SIEVGIDVTNAYVVAYRAGTQSYFLRDAPSSASD----YLFTGT-DQHSLPFYGTYGDL 116
                                                                                              114 EQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICTQMISEAARFQYIEG 173
              9 INFTTAGATVQSYTNFIRAVRGRLTNRVGL----PI------NQRFILVELSNHAEL 55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9 INFTTAGATVOSYTNFIRAVRGRLTNR----VGLPI-----NQRFILVELSNHAELSVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3 VSFSLSGADSKSYSKFITALRKALPSKEKVSNIPLLLPSASGASRYILMQLSNYDAKAIT
                                                                                                                                                                                                                                                                                                        Luffa cylindrica (Smooth loofah) (Sponge gourd).
Eukaryota, Viridiplantae, Streptophyta; Embryophyta; Tracheophyta;
Bukarnota; Viridiplantae, Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Cucurbitales; Cucurbitaceae; Luffa.
                                                                                                                                                                                                                                                                                                                                                                                                                                 Islam M.R., Hirayama H., Funatsu G., "Complete amino acid sequence of luffin-b, a ribosome-inactivating protein from sponge gourd (Luffa Cylindrica) seeds.";

Protein from sponge gourd (Luffa Cylindrica) seeds.";

-!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at or specific adenosine on the 28S rRNA.

-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.

TYPE I RIP SUBFAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                57; Indels 18; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HSSP, PIG094; LAHC.
Interpro; IRR01574; RIP.
Pfam; PP00161; RIP; 1.
PRINTS; PR00396; SHIGARICIN.
PROSITE; PS00275; SHIGA RICIN; 1.
Plant defense; Antiviral; Protein synthesis inhibitor; Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       30.5%; Score 290; DB 1; Length 250; 33.2%; Pred. No. 5.2e-20; tive 48; Mismatches 57; Indels 1
                                                                                                                                                                                                                                                          250 AA; 27293 MW; F01A8DC8A1078700 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BY SIMILARITY
                                                                                                                                                                                                                                    PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE=91248488; PubMed=136866;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61; Conservative
                                                                                                                                                                                                                                    STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PIR; JN0108; JN0108.
                                                                                                                                                                        174 RVRVSIQ 180
                                                                                                                                               EMRTRIR 180
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                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=3670;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           59 LALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLAG 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 119 NLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRTR 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      145 KERDSIPLGFMALDSAISTLYYDSRSAPI-----AFLVLIQTTAEAARYKYIEKQIIDR 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Plant Biotechnol. 17:337-340(2000).
-!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at one specific adenosine on the 28S rRNA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
TYPE 1 RIP SUBFAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              28 VKFSLLGSNHKSYSKFITSMRNALPNAGDIYNIPLLVPSISGSRRYILMQLSNYBGNTIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9 INFITAGATVQSYTNFIRAVRGRLTNR---VGLPI-----NQRFILVELSNHAELSVT
                                                                                                                                                                                                                         Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Cucurbitales; Cucurbitaceae; Cucumis.
                                                                                                                                        Putative ribosome-inactivating protein precursor (rRNA N-glycosidase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PUTATIVE RIBOSOME-INACTIVATING PROTEIN.
BY SIMILARITY.
N-LINKED (GLCNAC. ..) (POTENTIAL).
N-LINKED (GLCNAC. ..) (POTENTIAL).
N-LINKED (GLCNAC. ..) (POTENTIAL).
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Pfam; PRO0161; RIP; 1.
PRINTS; PRO0396; SHIGARICIN.
PROSITE; PS00275; SHIGAR RICIN; 1.
PROSITE; PS00275; SHIGAR RICIN; 1.
Plant defense; Antiviral; Protein synthesis inhibitor; Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61; Indels 18;
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                                                                                                                                                                                                                                                                                                                                                                                 1 21 POTENTIAL.
12 296 FOTATIVE RIBOSOME-INACTIVE
185 187 BY SIMILARITY.
103 103 N-LINKED (GLCNAC. .) (PC
110 110 N-LINKED (GLCNAC. .) (PC
252 252 N-LINKED (GLCNAC. .) (PC
286 AA, 31771 MW; 4EFD4966E604DA41 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      29.8%; Score 283; DB 1; 33.0%; Pred. No. 2.8e-19;
                                                 (6-OCT-2001 (Rel. 40, Created)
(6-OCT-2001 (Rel. 40, Last sequence update)
88-FEB-2003 (Rel. 41, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             45; Mismatches
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HSSP; P16094; 1AHC.
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                                                                                                                                                                    (EC 3.2.2.22).
Cucumis figarei
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                                                                                   16-OCT-2001
28-FEB-2003
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CARBOHYD
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9 INFITAGATVQSYTNFIRAVRGRLTNRVGLPIN-------QRFILVELSNHAELSV 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kataoka J., Habbika N., Miyano M., Masuta C., Koiwai A.;
"Nucleotide sequence of cDNA encoding alpha-luffin, a ribosome-
inactivating protein from Luffac cylindrica.";
Plant Mol. Biol. 18:1199-1202 (1992).
-!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at one
specific adenosine on the 28S rRNA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
TYPE I RIP SUBFAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  22 VRFSLSGSSSTSYSKFIGDLRKALPSN-GTVYNITLLLSSASGASRYTLMTLSNYDGKAI
                                                                                         01-DEC-1992 (Rel. 24, Last sequence update)
28-FBB-2003 (Rel. 41, Last annotation update)
28-FBB-2003 (Rel. 41, Last annotation update)
Ribosone-inactivating protein luffin-alpha precursor (rRNA
N-glycosidase) (EC 3.2.2.2)
Luffa cylindrica (Smooth loofah) (Sponge gourd).
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Cucurbitales; Cucurbitaceae; Luffa.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             20; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RIBOSOME-INACTIVATING PROTEIN LUFFIN-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HSSP; P16094; 1AHC.
InterPro; IPR001574; RIP.
Pfam; PF00161; RIP, 1.
PRINTS; PF00265; SHIGARICIN.
PROSTIE; PS00275; SHIGA RICIN; 1.
PROSTIE; PS00275; Antiviral; Protein synthesis inhibitor; Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 277;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BY SIMILARITY.
EA17FC27998C25AC CRC64;
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277 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      or send an email to license@isb-sib.ch).
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277 AA; 30212 MW;
                                                                       01-DEC-1992 (Rel. 24, Created)
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       STANDARD;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            193 RISKNO 198
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                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=3670;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              loxin; Signal.
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MLA_VISAL
ID _ MLA_VISAL
       RIPA LUFCY
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SEQUENCE
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Best Local 9
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254 AA.

PRT;

STANDARD;

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60 ALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLAGN 119
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                                                                                                                                                                                                                                                     SYNTHESIS THROUGH THE CATALYTIC INACTIVATION OF 60S RIBOSOWAL SYNTHESIS THROUGH THE CATALYTIC INACTIVATION OF 60S RIBOSOWAL SUBUNITS BY REMOVING ADENINE FROM POSITION 4,324 OF 28 SRNA. THE B CHAIN BINDS TO CELL RECEPTORS AND PROBABLY FACILITATES THE ENTRY INTO THE CELL OF THE A CHAIN, B CHAINS ARE ALSO RESPONSIBLE FOR CELL AGGLUTINATION (LECTIN ACTIVITY)
                                                                                                                                                                                                                                                                                                                                    -!- CATALYTIC ACTIVITY: Endohydrolysis of the N-glycosidic bond at one specific adenosine on the 28S rRNA.
-!- SUBUNIT: Disulfide-linked dimer of A and B chains.
-!- PHARMACEUTICAL: Due to its immunomodulative effects it is being studied in clinical trials in cancer patients as it may slow the growth of cancer cells and be an effective treatment for solid
                                                                                                                                                                                                                         "Complete amino acid sequence of the A chain of mistletoe lectin I."; FEBS Lett. 399:153-157(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                47; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                      AND NON-GLYCOSYLATED FORM MLA'.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
TYPE 2 RIP SUBFAMILY.
PIR; PD0018; PD0018.
                                                                                                                                                                                                                                                                                                                                                                                                                                    -!- MISCELLANEOUS: TWO ISOFORMS OF MLA EXIST: GLYCOSYLATED FORM MLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15-DEC-1998 (Rel. 37, Created)
15-DEC-1998 (Rel. 37, Last sequence update)
15-BEC-1998 (Rel. 41, Last annotation update)
Beta-galactoside specific lectin I A chain (MLA) (ML-I A) (rRNA N-glycosidase) (EG 3.2.2.22).
Viscum album (European mistletoe)
                                                                                       Bukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    28.7%; Score 272.5; DB 1; Length 254;
                                                                                                                                                                                                 Soler M.H., Stoeva S., Schwamborn C., Wilhelm S., Stiefel T.,
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T -> S (IN MLA').
D -> S (IN MLA').
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F - Y (IN MLA').

Y - D (IN MLA').

A - S (IN MLA').

A - S (IN MLA').

I - F (IN MLA').

PP - ST (IN MLA').
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                                                                                                                                                                            STRAIN=Subsp. album;
MEDLINE=97134581; PubMed=8980141;
                                                                                                                     Santalales; Santalaceae; Viscum
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Best Local Similarity 3/....
Best Local Similarity 3/....
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro; IPR001574; RIP. Pfam; PF00161; RIP; 1.
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231
235
254 AA;
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                                                                                                                                  NCBI_TaxID=3972;
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                                                                                                                                                                                                                          P16094; P24697;
D1.ARP.1990 (Rel. 14, Created)
D1.ARR.1992 (Rel. 21, Last sequence update)
15-SBP-2003 (Rel. 21, Last sequence update)
15-SBP-2003 (Rel. 21, Last sequence update)
Ribosome-inactivating protein momorful I precursor (rRNA N-glycosidase) (EC 3.2.2.2) (Alpha-momorcharin) (Alpha-MMC).
Momorfdica charantia (Bitter gourd) (Balsam pear).
Eukaryota, Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta, Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosida I; Cucurbitales; Cucurbitaceae; Momordica.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TISSUE=Seed;
MEDLINE=91159486; PubMed=2001404;
HO W.K.K., Liu S.C., Shaw P.C., Yeung H.W., Ng T.B., Chan W.Y.;
"Cloning of the cDNA of alpha-momorcharin: a ribosome inactivating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TISSUB-Seed;
MEDLINE-89326691; PubMed-2753596;
Montecucchi P.C., Lazzarini A.M., Barbieri L., Stirpe F., Soria M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Casellas P., Dussossoy D., Falasca A.I., Barbieri L.,
Gulllemot J.C., Ferrara P., Bolognesi A., Cenini P., Stirpe F.,
"Trichokirin, a ribosome-inactivating protein from the seeds of
Trichosanthes kirilowii Maximowicz. Purification, partial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS).
MEDLINE=94356447; PubMed=8075985;
Ren J., Wang Y., Bruart D.I.;
"The N-glycosidase mechanism of ribosome-inactivating proteins implied by crystal structures of alpha-momorcharin."; Structure 2:7-16(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    X-RAY CRYSTALLOGRAPHY (2.16 ANGSTROMS).
MEDLINE=94192822; PubMed=8143869;
Husain J., Tickle I.J., Wood S.P.;
"Crystal structure of momordin, a type I ribosome inactivating protein from the seeds of Momordica charantia.";
FEBS Lett. 342:154-158(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "N-terminal sequence of some ribosome-inactivating proteins.";
Int. J. Pept. Protein Res. 33:263-267(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     characterization and use for preparation of immunotoxins.";
Eur. J. Biochem. 176:581-588(1988).
120 LRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARF-
                                                                                                                                                                                                              286 AA.
                                                                         GEMRTRIRYN 182
                                                                                                                181 NSGASFLPDVYMLELETSWGQQSTQVQHS 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Biochim. Biophys. Acta 1088:311-314(1991)
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This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@ib-sib.ch)
                                                                                                                                                                                               RIBOSOME-INACTIVATING PROTEIN MOMORDIN I. MISSING IN MATURE PROTEIN.
                                                                                                                                                Gargoalterbis F1809-8.7.
Pfam; PF00161; RIP; 1.
PRINTS; PR00196; SHIGARICIN.
PROSITE; PS00275; SHIGA RICIN; 1.
PROSITE; PS00275; SHIGA RICIN; 1.
SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY. TYPE 1 RIP SUBFAMILY.
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                                                                          EMBL; X57682; CAA40869.1; -.
                                                                                                                                                                                   Glycoprotein; 3D-structure.
SIGNAL 1 23
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                                                                                      1AHA; 22-JUN-94.
1AHB; 22-JUN-94.
1AHC; 22-JUN-94.
                                                                                                                                             GlycoSuiteDB; P16094;
                                                                                                          1MOM; 31-MAY-94
1MRG; 07-FEB-95
                                                                                                                        1MRH; 07-FEB-95
                                                                                                                               1MRI; 07-FEB-95
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59 LALDVINAYVVGYRAGNSAYFFHPDNOEDAE-AITHLFTDVQNRYTFAFGGNYDRLEOLA 117
                                                                                                                                      118 GNIRENIELGNGPLEERISALYYYSTGGTQLPTLARSFIICIQMISEARRFQYIEGEMRT 177
                                                                                                                                                                                                  9 INFITAGATVQSYTNPIRAVRGRLTNR----VGLPI------NQRFILVELSNHAELSVT 58
                                                                            Query Match 28.4%; Score 270.5; DB 1; Length 286; Best Local Similarity 35.4%; Pred. No. 4.1e-18; Matches 64; Conservative 40; Mismatches 58; Indels 19; Gaps
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Search completed: February 10, 2004, 16:23:25 Job time : 6.17124 secs

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February 10, 2004, 16:17:00; Search time 24.6849 Seconds (without alignments) 1933.961 Million cell updates/sec
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1 IFPKQYPIINFTTAGATVQS.....ARFQXIEGEMRTRIRYNRRS 185
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GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                      Total number of hits satisfying chosen parameters:
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Maximum Match 100%
Listing first 45 summaries
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

| | Description | Q41174 ricinus com | Q94bw3 cinnamomum | Q94bw4 cinnamomum | Q94bw5 cinnamomum | Q9fv22 cinnamomum | Q94ke4 trichosanth | Q41216 trichosanth | Q91re3 trichosanth | 004367 sambucus ni | Q9avr2 sambucus eb | Q8lpv7 trichosanth | | | Q06076 abrus preca | Q945s2 sambucus ni | Q8gt32 sambucus ni |
|-----------|-------------------------------|--------------------|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------|--------|--------------------|--------------------|--------------------|
| SUMMARIES | ID | Q41174 | Q94BW3 | Q94BW4 | Q94BW5 | Q9FV22 | Q94KE4 | 041216 | Q9LRE3 | 004367 | Q9AVR2 | Q8LPV7 | 041611 | Q38760 | 90000 | 094552 | Q8GT32 |
| | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | * Query Match Length DB | 541 | 580 | 580 | 581 | 549 | 289 | 289 | 247 | 563 | 564 | 270 | 270 | 252 | 528 | 563 | 563 |
| | % Query Match | 98.3 | 38.9 | 38.9 | 38.5 | 38.3 | 35.3 | 35.1 | 34.4 | 34.3 | 34.0 | 33.0 | 32.6 | 32.6 | 32.4 | 32.2 | 32.2 |
| | Score | 934.5 | 370 | 370 | 366 | 364 | 335.5 | 333.5 | 327.5 | 326 | 323 | 313.5 | 310.5 | 310 | 308 | 306 | 306 |
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| Q9m669 abrus preca 004071 sambucus ni 000980 luffa cylin 004072 sambucus ni 038761 abrus preca Q96236 abrus preca Q96237 abrus preca Q96237 abrus preca Q96237 abrus preca Q96237 abrus preca Q96237 abrus preca Q96237 abrus preca Q96545 momordica c Q8H64 viscum albu Q9m654 polygonatum Q8w243 viscum albu Q8w243 viscum albu Q8rxh6 viscum albu Q8rxh7 viscum albu Q8rxh7 viscum albu Q8rxe8 iris hollan Q8rxe8 iris hollan Q8r452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha min Q8s452 jatropha min q9s4543 sambucus ni Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu Q8s452 jatropha cu | jatropha jatropha polygonat gynostemm |
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ALIGNMENTS

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MEDLINE=92338371;
ROBELINE=92338317;
ROBELINE=92338317;
ROBELINE=92338311;
ROBERTE L.M., Tregear J.W., Lord J.M.;
ROBERTE L.M., Tregear J.W., Lord J.M.;
Targeted Diagn. Ther. 7:81-97(192).
Targeted Diagn. Ther. 7:81-97(192).
C. !- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE SPECIFIC ADENOSINE ON THE 28S RRNA.
C. !- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
DR. SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
REMBL; $40366; AAB22582.1; -.
RISSP; PO28979; BR6.
INTERPO: IPRO0172; Ricin_B_lectin.
RITERPO: IPRO01474; RIP.
RITERPO: IPRO01409; Somatotropin.
Pfam; PP00652; Ricin_B_lectin; 6.
REMBL; PRO0161; RIP; I.
REMBL; RIPERPO: RICIN_B_LECTIN; 6.
REMBL; PRO0161; RIP; I.
                                                                                                                                                              Ricinus communis (Castor bean).

Eukaryota, Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Malpighiales; Euphorbiaceae; Ricinus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 1 541 AA; 60281 MW; 2B7B2CDEF1F2E9D9 CRC64;
                                                                      01-Nov-1996 (TrEMBLrel. 01, Created)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
11-NAR-2003 (TrEMBLrel. 23, Last annotation update)
proritin A chain (EC 3.2.2.22) (TRNA N-glycosidase)
                                    541 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRINTS; PR00396; SHIGARICIN.
SMART; SMO0458; RICIN; 2.
PROSITE; PS50231; RICIN B LECTIN; 2.
PROSITE; PS00275; SHIGA RICIN; 1.
PROSITE; PS00338; SOMATÖTROPIN_2; 1.
                                    PRT;
                                    PRELIMINARY;
                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Hydrolase; Toxin.
NON TER 1
SEQUENCE 541 AA
                                    041174
RESULT 1
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53 AELSVTLALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDR 112
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                                                                                                                                                                                                                                                             33 YQTVTFTTKNATKTSYTQF1EALRAQLASGEEPHGIPVWRERSTVPDSKRFILVELSNWA 92
                                                                                                                                                        107
                                                                                                                                                                                                61 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDABAITHLFTDVQNRYTFAFG 120
                                                                                                                                                                                                                                       GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 167
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-!- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE SPECIFIC ADENOSINE ON THE 28S RRNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Yang Q., Gong Z.Z., Liu W.Y.; wholecular cloning of three type 2 RIP (ribosome-inactivating protein)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RVGLPINQRFILVELSN-H
                                                                              ----NRVGLPINQRFILV
                                                                                                                   1 FPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHDIPVLPNRVGLPINQRFILV
                                                                                                                                                        ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             54; Indels 18; Gaps
                                       13; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -i- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY. EMBL; AV039803; AAK82460.1; -. InterPro; IPR000772; Ricin_B_lectin. InterPro; IPR001574; Ricin_B_lectin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, Laurales, Lauraceae, Cinnamomum.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     POTENTIAL.
TYPE 2 RIBOSOME-INACTIVATING PROTEIN
CINNAMOMIN III.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      genes encoding cinnamomin proteins and study of their expression
98.3%; Score 934.5; DB 10; Length 541; 93.4%; Pred. No. 1.8e-80; Indels 13; ive 0; Mismatches 0; Indels 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Type 2 ribosome-inactivating protein cinnamomin III precursor (EC 3.2.2.22) (rRNA N-glycosidase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    38.9%; Score 370; DB 10; Length 580;
47.6%; Pred. No. 1.2e-26;
tive 26; Mismatches 54; Indels 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             580 AA; 64421 MW; 940D10F01E7FB558 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     6 YPIINFTTAGATVQSYTNFIRAVRGRLTN--------
                                                                                                                                                                                                                                                                                                                                                                                                                                                         580 AA.
                                                                              1 IFPKOYPIINFTTAGATVQSYTNFIRAVRGRLT-
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Pfam; PF00161; RIP; I PRINTS; RR00396; SHIGARICIN.
SMART; SM00458; RICIN; 2.
PROSITE; PS50231; RICIN B LECTIN; 2.
Hydrolase; Signal; Toxin.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Cinnamomum camphora (Camphor tree)
                                                                                                                                                                                                                                                                                                                   168 FQYIEGEMRTRIRYNRRS 185
                                                                                                                                                                                                                                                                                                                                                          181 FQYIEGEMRTRIRYNRRS 198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A. Yang Q., Gong Z.Z., Liu W.Y.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
  Query Match
Best Local Similarity 93.4<sup>1</sup>
Matches 185; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRELIMINARY;
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nes 99; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=13429;
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113 LEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIE 172
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6 YPIINFTTAGATVOSYTNFIRAVRGRLTNRV---GLPI------NORFILVELSN-H 52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              33 YQTVTFTTKNATKTSYTQFIEALRAQLASGEEPHGIPVMRDGSTVPDSKRFILVELSNWA 92
                                                                                                                                                                                                                                                                                                                                                                                                                Submitted (JUN-2001) to the EMBL/GenBank/DDBJ databases.
-!- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE SPECIFIC ADENOSIDE ON THE 28S RRNA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
EMBL, AY039802; AAK82459.1;
                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A. Yang O., Gong Z.Z., Liu W.Y., Yang O., Gong Z.Z., Liu W.Y., "Molecular cloning of three type 2 RIP (ribosome-inactivating protein) genes encoding cinnamomin proteins and study of their expression
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             52; Indels 18; Gaps
                                                                                                                                                                                                                                      Cinnamomum camphora (Camphor tree).
Bukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, Laurales, Lauraceae, Cinnamomum.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     POTENTIAL. TYPE 2 RIBOSOME-INACTIVATING PROTEIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        38.9%; Score 370; DB 10; Length 580; ilarity 47.6%; Pred. No. 1.2e-26; Conservative 28; Mismatches 52; Indels 18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        094BW5;
01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-DEC-2003 (TrEMBLrel. 23, Last annotation update)
Type 2 ribosome-inactivating protein cinnamomin I precursor
(EC 3.2.2.2) (TRNA N-glycosidase).
                                                                                                                                                                                                       Type 2 ribosome-inactivating protein cinnamomin II precursor (EC 3.2.2.22) (rRNA N-glycosidase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     580 AA; 64265 MW; 37E4289ECCE0CBFF CRC64;
                                                                                                                                                   01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
                                                                                                                      580 AA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRINTS; PR00396; SHTGARICIN.
SMART; SM00458; RICIN; 2.
PR0STIE; PS5021; RICIN B_LECTIN; 2.
Hydrolase; Signal; Toxin.
32 POTENTIP
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InterPro; IPR001574; RIP.
Pfam; PF00652; Ricin_B_lectin; 6.
Pfam; PF00161; RIP; 1.
                                                                                                                    PRT;
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173 GEMRTRI 179
                               208 YRVRESI 214
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ses 89; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                       6 YPIINFTTAGATVQSYTNFIRAVRGRLTN------RVGLPINQRFILVELSN-H 52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  purification, characterization and mutagenesis of the A-Chain.";
Submitted (SEP-2000) to the EMBL/GenBank/DDBJ databases.
-!- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE
SPECIFIC ADENOSINE ON THE 28S RRNA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
EMBL; AF255948; AAF68978.2; ---
HSSP; P02879; 2AAI.
                                                                                                                                                -!- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE SPECIFIC ADENOSINE ON THE 28S RRNA.
                                                                                             "Molecular cloning of three type 2 RIP (ribosome-inactivating protein) genes encoding cinnamomin proteins and study of their expression
                                                                                                                                                                                                                                                                                                                                                                                                            55; Indels 18; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-MAR-2001 (TrEMBLrel. 16, Last sequence update)
01-0CT-2002 (TrEMBLrel. 22, Last annocation update)
Type II ribosome-inactivating protein cinnamomin (EC 3.2.2.22) (rRNA N-glycosidase) (Fragment)
                                                                                                                                                                      -!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
EMBL, AY039801; AAK82458.1; -.
INTERPO: IPRO00772; Ricin_B_lectin.
InterPro: IPR010574; RIP.
Pfam; PR00152; Ricin_B_lectin; 5.
Pfam; PR00151; RIP; I.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, Laurales, Lauraceae, Cinnamomum.
              Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Laurales; Lauraceae; Cinnamomum.
                                                                                                                                                                                                                                                                                                                          TYPE 2 RIBOSOME-INACTIVATING PROTEIN CINNAMOMIN I.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Xie L., Liu W.-Y., Wang E.-D.; "Molecular cloning of cinnamomin A-, B-chain and the expression,
                                                                                                                                                                                                                                                                                                                                                                                  Length 581;
                                                                                                                                     Submitted (JUN-2001) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                      GEBF5FB8FBA3D196 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                38.5%; Score 366; DB 10; 47.6%; Pred. No. 2.9e-26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   549 AA.
                                                                                                                                                                                                                                                                                                                                                                                                           25; Mismatches
                                                                                                                                                                                                                                                                                                                POTENTIAL.
                                                                                                                                                                                                                                                                                  PROSITE; PS50231; RICIN B LECTIN; 2. Hydrolase; Signal; Toxin.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cinnamomum camphora (Camphor tree)
  Cinnamomum camphora (Camphor tree)
                                                                                                                                                                                                                                                                                                                                                       581 AA; 64215 MW;
                                                                  SEQUENCE FROM N.A. Yang Q., Gong Z.Z., Liu W.Y.;
                                                                                                                                                                                                                                                          PRINTS; PR00396; SHIGARICIN. SMART; SMO0458; RICIN; 2.
                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity 4....
Best Local Similarity 4....
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      173 GEMRTRI 179
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=13429;
                                       NCBI_TaxID=13429;
                                                                                                                                                                                                                                                                                                                            33
                                                                                                                                                                                                                                                                                                                                                       SEQUENCE
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Q9FV22
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   53 AELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDR 112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           113 LEQLAGNLRENIELGNGPLEEAISALYYSTGGTQLPTLARSFIICIQMISEAARFQYIE 172
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       25 VSFRLSGAISSSYGVFISNLRKALPNERKLYDIPLLRSSLPGSQRYALIHLTUYADETIS 84
                                                                                                                                                                                                                                                                                                                                                                                                                   -RVGLPINQRFILVELSN-H 52
                                                                                                                                                                                                                                                                                                                                                                                                                                                Submitted (MAR-2011) to the RMEL/GenBank/DBB databases.
Submitted (MAR-2010) to the RMEL/GenBank/DBB databases.
-- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE SPECIFIC ADENOSINE ON THE 28S RANA.
-- INMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
EMBL; AF367252, AAK52960.1; --
InterPro; IPR001574; RIP.
PFam; PF00161; RIP; 1.
PROSITE; PS00256; SHIGARICIN.
Hydrolase; Signal; Toxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Cucurbitales; Cucurbitaceae; Trichosanthes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 19; Gaps
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                                                                                                                                                                                                                                                                                                      Length 549;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Trichosanthin precursor (EC 3.2.2.22) (rRNA N-glycosidase)
                                                                                                                                                                                                                                                                                                                                                             55; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 50; Indels
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                                                                                                                                                                                                                                                     549 AA; 60648 MW; 02607FE607CA44B0 CRC64;
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                                                                                                                                                                                                                                                                                                      Query Match

38.3%; Score 364; DB 10;
Best Local Similarity 47.6%; Pred. No. 4.2e-26;
Matches 89; Conservative 25; Mismatches 55;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Trichosanthes kirilowii (Mongolian snake-gourd)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  289 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TRICHOSANTHIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  POTENTIAL
InterPro; IPR000772; Ricin_B_lectin.
InterPro; IPR001574; RIP.
                                                                                                          PRINTS; PR00396; SHIGARICIN.
SMART; SM00458; RICIN; 2.
PROSITE; PS50231; RICIN_B_LECTIN; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRT;
                                                      Pfam; PF00652; Ricin B lectin; 5.
Pfam; PF00161; RIP; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best_Local Similarity 39.0%
Matches 71; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         173 GEMRTRI 179
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                                                                                                                                                                                                 Hydrolase; Toxin.
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EMBL; U76524; AAC15886.1; -. HSSP; P02879; ZAAI.
                                                                                                                                                                                                                                                                           SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     118 GNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRT 177
                      GNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIOMISEAARFOYIEGEMRT 177
                                      85 VAIDVTNVYIMGYRAGDTSYFF---NEASATEAAKYVFKDSMRKITLPYSGNYERLQTAA 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9 INFITAGATVQSYTNFIRAVRGRLTN------RVGLPINQRFILVELSNHAELSVT 58
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                                                                                                                                                                                                                                                                                                                                                                         -!- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE SPECIFIC ADENOSINE ON THE 28S RRNA.
                                                                                                                                                                                       01-NOV-1996 (TERMELE). 01, Last sequence update)
01-OCT-2002 (TERMELE). 22, Last annotation update)
11-ichosanthin (EC 3.2.2.22) (TRNA N-glycosidase).
TRICHOSANTHIN, TCS.
TRICHOSANTHIN, TCS.
Trichosanthes kirilowii (Mongolian snake-gourd).
Edwaryopta; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosida I; Cucurbitalee; Cucurbitaceae; Trichosanthee.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               19; Gaps
                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
MEDLINE=94271613; PubMed=8003348;
Zheng H., Wang B., Shaw P., Yeung H.;
[Cloning and DNA sequencing of the gene encoding trichosanthin].";
I Chuan Hsueh Pao 21:42-51(1994).
                                                                                                                                                                                                                                                                                                                                                                                                 -!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 10; Length 289;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q9LRE3;
01-0CT-2000 (TrEMBLrel. 15, Created)
01-0CT-2000 (TrEMBLrel. 15, Last sequence update)
01-0CT-2002 (TrEMBLrel. 22, Last annotation update)
Trichobakin (EC 3.2.2.22) (rRNA N-glycosidase) (Fragment).
TBK.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Match 35.1%; Score 333.5; DB 10; Length Local Similarity 39.0%; Pred. No. 1.4e-23; les 71; Conservative 42; Mismatches 50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                289 AA; 31650 MW; 286AC14D48BCA175 CRC64;
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                                                                                                                                                         289 AA.
                                                                                                                                                                    Q41216;
01-NOV-1996 (TrEMBLrel. 01, Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRT;
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PROSITE; PS00275; SHIGA_RICIN; 1.
                                                                                                                                                                                                                                                                                                                                                                                                             EMBL; S70176; AAB31048.1;
HSSP; P09989; 1MRJ.
                                                                                                                                                                                                                                                                                                                                                                                                                                     InterPro; IPR001574; RIP.
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                                                                                                                                                          PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam; PF00161; RIP;
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                                                                                            197 RV 198
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59 LALDVINAYVVGYRAGNSAYFFHPDNQEDA-EAITHLFTDVQNRYTFAFGGNYDRLEQLA 117
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     118 GNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIOMISEAARFQYIEGEMRT 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9 INFTTAGATVQSYTNFIRAVRGRLTN-----RVGLPINQRFILVELSNHAELSVT 58
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-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
                                                                                                                                                                                                                         Phan Van Chi, Nguyen Thuy Ha, Le Tran Binh;
"Genomic DNA Clone for mature typ-1 ribosome-inactivating protein from
Trichosanthes sp. sample 01 Bac Kan 8-98 Vien CNSH (Hanoi).";
submitted (FEB-2000) to the EMBL/GenBank/DDBJ databases.
-!- CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE
SPECIFIC ADENOSINE ON THE 28S RRNA.
                 Eukaryota, Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Cucurbitales; Cucurbitaceae; Trichosanthes.
NCBI_TaxID=118182;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                       -!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta, Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots, Asteridae, campanulids, Dipsacales, Adoxaceae, Sambucus.
NCBI_TaxID=4202;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "The major elderberry (Sambucus nigra) fruit protein is a lectin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            derived from a truncated type 2 ribosome-inactivating protein.";
Plant J. 12:1251-1260(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           similarity 39.0%; Pred. No. 4.2e-23; Pred. 79.7 Mismatches 50; Indels 19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-JTL-1997 (TrEMBLrel. 04, Created)
01-JTL-1997 (TrEMBLrel. 04, Last sequence update)
01-JTL-1997 (TrEMBLrel. 22, Last annotation update)
Ribosome inactivating protein precursor (EC 3.2.2.22) (rRNA N-glycosidase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
WEDLINE=98112023; PubMed=9450339;
WEDLINE=88112023; Roy S., Barre A., Rouge P., Van Leuven F.,
Peumans W.J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       247 AA; 27199 MW; 89811AC32892F03F CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      563 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRINTS; PR00396; SHIGARICIN.
PROSITE; PS00275; SHIGA_RICIN; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sambucus nigra (European elder)
Trichosanthes sp. Bac Kan 8-98.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL; AB039324; BAA92530.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            InterPro; IPR001574; RIP.
Pfam; PF00161; RIP; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRELIMINARY;
                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HSSP; P09989; 1MR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hydrolase; Toxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     178 RI 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 174 RV 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Simi
Matches 71;
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SEQUENCE FROM N.A.
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SEQUENCE
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                 QSLPV7;
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                                                                                                                                                                                                                                                                                                                                      RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                 셤
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Molecular clouning of ebulin 1.";
"Molecular clouning of ebulin 1.";
"Molecular clouning of ebulin 1.";
"Landly Company of EMBL/GenBank/DDBJ databases.
"Company of EMBL/GenBank/DDBJ databases."
"I CATALYTIC ACTIVITY: EMBOLYSIS OF THE N-GLYCOSIDIC BOND AT ONE
"SPECIFIC ADBROSINE ON THE 28S RRAN."
"I STRICATEL ADBROSINE ON THE 28S RRAN."

EMBL; AJ400822; CAC33178.1; -..

EMBL; AJ400822; CAC33178.1; -..

EMBL; AJ400822; Ricin B lectin.

EMBL; APROSIS; Ricin B lectin.

Efam; PP00161; RIP; 1.

EMBL; AS00458; RICIN; 2.

EMBL; AS00458; RICIN; 2.

EMBL; AS00458; RICIN; 2.

EMBL; AS00458; RICIN; 3.

EMBL; AS00458; RICIN; 1.

EMBL; AS00458; RICIN; 2.

EMBL; AS00458; RICIN; 3.

EMBL; AS00458; RICIN; 1.

EMBL; AS00458; RICIN; 2.

EMBL; AS00458; RICIN; 3.

EMBL; AS00458; RICIN; 3.

EMBL; AS00458; RICIN; 3.

EMBL; AS00458; RICIN; 3.

EMBL; AS00458; RICIN; 3.

EMBL; AS00458; RICIN; 3.

EMBL; AS00458; RICIN; 3.

EMBL; AS00458; RICIN; 3.

EMBL; AS00458; RICIN; 3.

EMBL; AS00458; RICIN; 4.

EMBL; AS00458; RICIN; 5.
                                                                                                                                                                                                                                                                                                                        53 AELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAI -- THLFTDVQNRYTFAFGGNY 110
                                                                                                                                                                                                                                                                                                                                           111 DRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQY 170
                                                                                                                                                                                                                                                                                                                                                                                                             142 DNLETAAGTRRESIELGPSPLDGAITSLYYDE-----SVARSLLVVIQMVSEAARFRY 194
                                                                                                                                                                                                                                                              6 YPIINFTTAGATVQSYTNFIRAVRGRLINRV----GLP------INQRFILVELSNH 52
                                                                                                                                                                                                                                                                                         87
                                                                                                                                                                                                                                                                                         28 YPSVSFNLAGAKSATYRDFLKNLRTIVATGTYEVNGLPVLRRESEVQVKNRFVLVLLTNY
                                                                                                                                                                                                                                  Gaps
                                                                                                                           POTENTIAL.
RIBOSOME INACTIVATING PROTEIN, A CHAIN.
PTHOSOME INACTIVATING PROTEIN, B CHAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta, Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots;
Asteridae, campanulids, Dipsacales, Adoxaceae, Sambucus.
                                                                                                                                                                                                                                  48; Indels 28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-JUN-2001 (TrEMBLrel. 17, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Ribosome-inactivating protein precursor (EC 3.2.2.22) (rRNA
                                                                                                                                                                                                      Length 563;
                                                                                                                                                                       563 AA; 62336 MW; 3ED2B6C08E796205 CRC64;
                                                                                                                                                                                                      DB 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       POTENTIAL.
EBULIN L A-CHAIN.
EBULIN L B-CHAIN.
                                                                                                                                                                                                                   Pred. No. 1.8e-22
                                                                                                                                                                                                                                  37; Mismatches
                                                                                                                                                                                                      34.3%; Score 326;
         InterPro; IRRO01574; RIP.

Fram; PR00652; Ricin B lectin; 6.

Pfam; PR00161; RIP; 1.

PRINTS; PR00396; SHIGARICIN.

SWART; SW00458; RICIN, 2.

PROSITE; PS00275; SHIGA RICIN; 1.

Hydrolase; Signal; Toxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-JUN-2001 (TrEMBLrel. 17, Created)
 InterPro; IPR000772; Ricin_B_lectin.
                                                                                                                                                                                                                      40.5%;
                                                                                                                                                                                                                                    77; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        195 İEQEVRRSLQ 204
                                                                                                                                                                                                                                                                                                                                                                                                                                            171 IEGEMRTRIR 180
                                                                                                                                                                                                        Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI TaxID=28503;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        N-glycosidase).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         rissue=Leaf;
                                                                                                                                                                           SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q9AVR2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q9AVR2
                                                                                                                                  SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 10
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              59 LALDVINAYVVGYRAGNSAYFFHPDNQEDA-EAITHLFTDVQNRYTFAFGGNYDRLEQLA 117
                                                                                                                                                                                                  53 AELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAI - - THLFTDVQNRYIFAFGGNY 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9 INFITAGATVQSYTNFIRAVRGRLTN------RVGLPINQRFILVELSNHABLSVT 58
                                                                                                                                                         87
                                                                                                                   6 YPIINFTTAGATVQSYTNFIRAVRGRLTNRV----GLP-----INQRFILVELSNH 52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          25 VSFRLSGATSSSYGVFISNIRKALPYEKKLYDIPLIRSSLSGSGRYALIYLTUYADETIS
                                                                                                                                                                                                                                                                                                    Bukaryota, Viridiplantae, Streptophyta, Embryophyta; Tracheophyta;
Spermatophyta, Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids 1; Cucurbitales; Cucurbitaceae; Trichosanthes.
NCBI_TaxID=3677;
                                                                                                                                            28 YPSVSFNLAGAKSTTYRDFLKNLRDRVATGTYEVNGLPVLRRESEVQVKNRFVLVRLTNY
                                                                                                                                                                                                                                      88 NGDTVTSÅVDVTNLYLVAFSÅNGNSYFF----KDÅTELQKSNLFLGT-TQHTLSFTGNY
                                                                                                                                                                                                                                                                                111 DRIEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19; Gaps
                                                                              Gaps
                                                                            28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 10; Length 270;
                                    Length 564;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-OCT-2002 (TrEMBLrel. 22, Created)
01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
7_richosanthin precursor (EC 3.2.2.22) (rRNA N-glycosidase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            33.0%; Score 313.5; DB 10; ____
77 4%; Pred. No. 1e-21;
77 4%; Pred. Tropes 52; Indels
                                                                            48; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               270 AA; 29683 MW; 531713B754F9B769 CRC64;
564 AA; 62694 MW; 8261681A6DB55CB8 CRC64;
                                  34.0%; Score 323; DB 10;
40.0%; Pred. No. 3.5e-22;
tive 38; Mismatches 48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Trichosanthes kirilowii (Mongolian snake-gourd)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TRICHOSANTHIN.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity 37.4%;
Marches 68; Conservative 4
                   Query Match
Best Local Similarity 40...
Best Acca 76; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                    171 IEGEMRTRIR 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        270
                                                                                                                                                                                                                                                                                                                                                                                                          195 İEQEVRRSLQ 204
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[1] -
SEQUENCE FROM N.A.
MEDLINE=93132798; PubMed=8421313;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     177 GVSIR 181
                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NCBI_TaxID=3816;
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SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q06076
Q06076;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    118 GNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEMRT 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            25 VSFRLSGARSSSYGVFISNLRKALGNERRLYDIPLIRSTLPGCERYALIHIRNYADETIS 84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ---RVGLPINQRFILVELSNHAELSVT 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Xu L.;
Submitted (APR-1995) to the EMBL/GenBank/DDBJ databases.
-! CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE
SPECIFIC ADENOSINE ON THE 28S RENA.
-!- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
                                                                                                                                                                                                                           01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
Trichosanthin (EC 3.2.2.2) (TRNA N-glycosidase) (Fragment).
Trichosanthes kirilowii (Mongolian snake-gourd).
Eukaryota; Viridiglantae, Streptophyte; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyjedons; core eudicots; Rosidae;
eurosids I; Cucurbitales; Cucurbitaceae; Trichosanthes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                          Bao Y., Chu R., Han J., Zhang H., Pan N., Gu X., Chen Z.; "Cloning and sequencing of trichosanthin gene and its expression in Escherichia coli and tobacco plant."; Sci. China B. 36:669-676(0).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Abrus precatorius (Indian licorice) (Crab's eye).
Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          32.6%; Score 310.5; DB 10; Length 270; 37.4%; Pred. No. 2e-21; tive 40; Mismatches 55; Indels 19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-NOV-1998 (TrEMBLrel. 08, Created)
01-NOV-1998 (TrEMBLrel. 08, Last sequence update)
01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
Abrin-E (RRNA N-glycosidase) (EC 3.2.2.22) (Fragment).
RIP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            270 AA; 29993 MW; 3D73FB461EA8E8D4 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          252 AA.
                                                                                                                                                             270 AA.
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                                                                                                                                                                                                        Created)
                                                                                                                                                             PRT;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRINTS; PR00396; SHIGARICIN.
                                                                                                                                                                                                          01-NOV-1996 (TrEMBLrel. 01,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EMBL; U25675; AAA70096.1;
HSSP; P09989; 1MRJ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         InterPro; IPR001574; RIP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       68; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRELIMINARY:
                                                                                                                                                             PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pfam; PF00161; RIP; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Hydrolase; Toxin.
                                                                                                                                                                                                                                                                                                                                                                                   NCBI_TaxID=3677;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RI 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RV 198
  178 RI 179
                                             197 RV 198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
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                                                                                                                                                                                     041611;
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64 SIEVGIDVTINAYVVAYRAGSQSYFL---RDAPASASTYLFTGTQ-RYSLRFDGSYGDLER 119
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           56 SVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQ 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   116 LAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIOMISEAARFQYIEGEM 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9 INFTIAGATVQSYTNFIRAVRGRLTNRVGL----PI-----NQRFILVELSNHAEL 55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRECEDES ENDOCYTOSIS.

-! CATALYTIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE SPECIFIC ADENOSINE ON THE 28S RRNA.
-! SUBUNI: DISQLETIDE-LINEAD DIMER OF A AND B CHAINS.
-! DOMAIN: THE B CHAIN IS COMPOSED OF TWO DOMAINS, EACH DOMAIN CONSISTS OF 3 HOWDOWOLOGOUS SUBDOMAINS (ALPHA, BETA, GAMMA).
-! SIMILARITY: TO OTHER BACTERIAL AND PLANTS RIBOSOME-INACTIVATING PROTEINS. BELONGS TO TYPE 2 RIP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-MOV-1996 (TrEMBLrel. 01, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Abrin-d (EC 3.2.2.22) (rRNA N-glycosidase) (Fragment).
Abrus precatorius (Indian licorice) (Crab's eye).
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Fabales; Fabaceae; Papilionoideae; Abreae; Abrus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6 IKFSTEGATSQSYKQFIEALRERL--RGGLIHDIPVLRDPTTVEERNRYITVELSNSERE
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
                                                                                                                                                                                                                                                                                                                                                                                             J. Biol. Chem. 266:6848-6852(1991).
-!- FUNCTION: THE A CHAIN IS RESPONSIBLE FOR INHIBITING PROTEIN SYNTHESIS THROUGH THE CALLYLIC INACTIVATION OF 60S RIBOSOWAL SUBUNITS BY REMOVING ADENINE FROM POSITION 4,324 OF 28 S RRNR.
                                                                                                                                                                                                                                                                                   Evensen G., Mathiesen A., Sundan A.;
"Direct molecular cloning and expression of two distinct abrin A-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ABRIN-A IS MORE TOXIC THAN RICIN.
-!- FUNCTION: THE B CHAIN IS A GALACTOSE-SPECIFIC LECTIN THAT
FACILITATES THE BINDING OF ABRIN TO THE CELL MEMBRANE THAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro; Leavers...
Pram; PF00161; RIP; 1.
PRINTS; PR00396; SHIGARICIN.
PROSITE; PS00275; SHIGA_RICIN; 1.
Hydrolase; Glycosidase; Toxin; Repeat; Glycoprotein; Lectin.
1940rolase; Glycosidase; ABRIN E, A CHAIN (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           32.6%; Score 310; DB 10; Length 252; 43.8%; Pred. No. 2e-21;
eurosids I; Fabales; Fabaceae; Papilionoideae; Abrese; Abrus. NCBI_TaxID=3816;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 28309 MW; BBFC846B9E92B5DE CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             21; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-NOV-1996 (TrEMBLrel. 01, Created)
                                                                                                                                                                                                                                     MEDLINE=91201329; PubMed=2016300;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL; X54872; CAA38654.1; -.
HSSP; P11140; 1ABR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         81; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro; IPR001574; RIP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
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54 ELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRL 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          114 EQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEG 173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 ODQVIKETTBGALSOSYKQFIEALRQRLTGGLIHDIPVLPDPTTVEERNRYITVELSNSE 60
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"Primary structure of three distinct isoabrins determined by CDNA sequencing: conservation and significance.";
J. Mol. Biol. 229:263-267 (1998)
-:- CATALITIC ACTIVITY: ENDOHYDROLYSIS OF THE N-GLYCOSIDIC BOND AT ONE SPECIFIC ADENOSINE ON THE 288 RRNA.
-:- SIMILARITY: BELONGS TO THE RIBOSOME-INACTIVATING PROTEIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5 QYPIINFTTAGATVQSYTNFIRAVRGRLTNRV--GLPI------NORFILVELSNHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels 18; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Asteridae; campanulids; Dipsacales; Adoxaceae; Sambucus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             y Match 32.4%; Score 308; DB 10; Length 528; Local Similarity 42.2%; Pred. No. 8.7e-21; hes 79; Conservative 23; Mismatches 67; Indels 16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      528 AA; 58870 MW; 62ED42FB8FFE60F8 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Ribosome-inactivating protein (EC 3.2.2.2) (TRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; AF409135; AAL04123.1; -.
InterPro; IPR000772; Ricin_B_lectin.
InterPro; IPR001574; RIP.
Pfam; PF00652; Ricin_B_lectin; 6.
Pfam; PF00161; RIP; I.
                                                                                                                                                                                                                                                                                                                                                                                                              PRINTS; PR00396; SHIGARICIN.
SMART; SM0458; RICIN; 2.
PROSITE; PS00275; SHIGA_RICIN; 1.
                                                                                                                                                                                                                                                                                         InterPro; IPR000772; Ricin B lectin
                                                                                                                                                                                                                                                                                                               InterPro; IPR001574; RIP.
Pfam; PF00652; Ricin B lectin; 6.
Pfam; PF00161; RIP; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sambucus nigra (European elder).
                                                                                                                                                                                                                              EMBL; M98346; AAA32626.1; -. HSSP; P11140; 1ABR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        528
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         174 RVGVSIR 180
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Hydrolase; Toxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          N-glycosidase).
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53 AELSVTLALDVTNAVVVGYRAGNSAYFFHPDNQEDAEAI--THLFTDVQNRYTFAFGGNY 110
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                                                                                                                                                                                                                                                                                              6 YPIINFITAGAIVQSYINFIRAVRGRLINRV----GLP------INQRFILVELSNH 52
                                                                                                                                                                                                                                  28 YPSVSFNLDGAKSATYRDFLSNLRKTVATGTYEVNGLPVLRRESEVQVKSRFVLVPLTNY 87
                                                                                                                   Query Match
Best Local Similarity 38.4%; Pred. No. 1.5e-20;
Matches 73; Conservative 36; Mismatches 53; Indels 28; Gaps
                                                                                     07F7CBEDCF33BF10 CRC64;
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                 SMART; SM00458; RICIN; 2.
PROSITE; PS50231; RICIN_B_LECTIN; 2.
PROSITE; PS00275; SHIGA_RICIN; 1.
                                                                         Hydrolase; Toxin.
SEQUENCE 563 AA; 62242 MW;
PRINTS; PR00396; SHIGARICIN.
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February 10, 2004, 16:13:20; Search time 34.0993 Seconds (without alignments) 930.966 Million cell updates/sec
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GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
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Maximum Match 100%
Listing first 45 summaries
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Gapop 10.0 , Gapext 0.5
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1029
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

| | Describeron | Ricin A chain. Un | Ricin A-chain (RIA | Ricin A-chain ribo | Ricin A-chain RIP. | Ricin A. Escheric | Sequence of Ricinu | Ricin A encoded by | Anti-cataract immu | Ricin D. Ricinus |
|-------------|---|-------------------|--------------------|--------------------|--------------------|-------------------|--------------------|--------------------|--------------------|------------------|
| SUMMARIES | T. | AAR37290 | AAR63902 | AAW25136 | AAW21699 | AAP70097 | AAP70838 | AAP95639 | AAR70827 | AAP90079 |
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| 2 80 H 8 2 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 | 14 AAR39570 AAP50166 22 AAG78300 14 AAR39571 8 AAP70325 9 AAP80164 7 AAP60240 | 110 111 111 118 118 | 8 1 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | 18 AAW2140 11 AAW21703 11 AAR07514 13 AAR25572 14 AAR32986 15 AAK55129 18 AAW10468 |
| www.www. | 99.3 268 99.2 565 99.0 534 98.7 200 | | | 33.2 2899 33.2 2843 33.2 2899 33.2 2899 33.2 2899 |
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ALIGNMENTS

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Type II ribosome-inactivating protein; type II RIP; gelonin; momordin; immunoconjugate; autoimmune disease; cell killing; toxin.
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                                                                                    AAR37290 standard; protein; 267 AA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Unidentified.
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19-JUN-1992;
                                                                                                                                                                                                                                                                                                                                                        13-SEP-1993
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RESULT 1
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                                                                                                                                                                                                                                                                                                                                                                                                                                    2 IFPKQYPIINFTTAGATVQSYINFIRAVRGRLTTGADVRHBIPVLPNRVGLPINQRFILW 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 60
                                                                                                   The invention covers analogues of Type I RIPs. Ricin is a Type II RIPs whose A chain is homologous to plant type I RIPs. The analogues of the invention have a cysteine available for intermolecular disulphide bonding at an amino acid position corresp. to a position not naturally available for bonding; the cys residue is located in the C-terminal region of the analogue between a position corresp. to amino acid 251 and the C-terminus of ricin A chain. The analogues are pref. joined via a disulphide linkage to a molecule which specifically binds to a target cell, e.g. an antibody fragment.

(Updated on 09-JAM-2003 to correct PN field.)
Analogues of type I ribosome inactivating protein - useful as cytotoxic agents, immuno toxins for treating auto immune diseases, cancer, graft versus host disease and selective cell killing in=vivo
                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
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                                                                                                                                                                                                                                                                                                                                                           99.5%; Score 1024; DB 14; Length 267; 100.0%; Pred. No. 7.5e-101; tive 0; Mismatches 0; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ricin A chain; RTA; ribosome-inactivating proteins; RIPs; cytotoxic therapeutic agents; autoimmune disease; cancer;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Carroll SF;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAR63902 standard; protein; 267 AA
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                                                                         Claim 1; Page 92; 163pp; English
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                                                                                                                                                                                                                                                                                                                                                                               al Similarity 100.
199; Conservative
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27-JUL-1995
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                                                                                                                                                                                                                                                                                                                               Sequence
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Matches
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61 ELSNHAELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFIDVQNRYTFAFG 120
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ELSNHAELSVILLALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Maize, proRIP, ribosome inactivating protein; alpha, beta subunit; internal linker; Barley Translation Inhibitor; Trichosanthin; Kicin A-chain; Abrin-A A-chain, Apporin; SIT-1; Luffin A; WAP; Ricinus communis agglutinin; Momordin; PAP-S; Luffin-B; Dianthin 30; therapeutic toxin; tumour cell targeted; protein synthesis inhibitor; post-translational modification; cancer; neoplasia; HIV: AIDS; human immunodeficiency virus; acquired immune deficiency syndrome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
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                                                                                                                                                                                                                                                                                                                                                                                       0; Gaps
                                                                                         AAR63902 is the ricin A chain gene product, it is analogous to the ribosome-inactivating proteins (RIPs) described in AAR63903-R63911. RIPs are the key components of cytotoxic therapeutic agents (CTAs),
                                                                                                                                           which include gene fusion products and immunoconjugates. CTAs may be used to selectively eliminate any cell type to which a RIP component is targetted, by the specific binding capacity of the second component of the agent. They can be used in the treatment of diseases where the elimination of a particular cell type is
                                                                                                                                                                                                                                          desired, such as autoimmune disease, cancer and graft-versus-host
                                                                                                                                                                                                                                                                                                                                                  Length 267;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ricin A-chain ribosome inhibitory protein inactive precursor.
                                                                                                                                                                                                                                                                                                                                                                                       Indels
suitable for use as components of cytotoxic
                                                                                                                                                                                                                                                                                                                                                Query Match
99.5%; Score 1024; DB 16;
Best Local Similarity 100.0%; Pred. No. 7.5e-101;
Matches 199; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                             (Updated on 25-MAR-2003 to correct PN field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAW25136 standard; Protein; 290 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182 FQYIEGEMRTRIRYNRRSA 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181 FOYIEGEMKTRIRYNRRSA 199
                                                        Example 3; Fig 1; 221pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     90US-0535636.
95US-0378761.
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(first entry)
                   therapeutic agents.
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                                                                                                                                                                                                                                                                                                                 267 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     09-DEC-1992;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       11-JUN-1990;
26-JAN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            25-MAR-2003
02-DEC-1997
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   are
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                                                                                                                                                                                                                                                                                                                   Sequence
 which
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121

Walsh TA;

WPI; 1997-362934/33

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AAW25136 represents a Ricin A-chain ribosome inhibitory protein (RIP)
which was engineered to contain a selectively removable internal peptide
linker sequence separating the alpha and beta units of the RIP. When
separated the two units regain activity and are capable of inactivating
eukaryotic ribosomes and hence preventing protein production. Many
different RIPs may be produced with an internal linker including
maize RIP, Trichosanthin, Ricin A-chain, Abrin-A A-chain and
Saporin. The RIPs can be used in the construction of therapeutic
toxins targeted to specific cells such as tumour cells via the
attachment of a targeting polypeptide, e.g. a monoclonal antibody.
A further use is in HIV therapy (see US486903). There is interest
in expressing RIP recombinantly in host eukaryotic cells, because of
the capacity to provide correct post-translational processing. However,
RIPs effectively inhibit protein synthesis in eukaryotic cells resulting
in cell death. Since the inactive RIP proteins are not cytotoxic to
eukaryotic cells, they can be recombinantly expressed in such cells and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      85 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 144
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     25 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              pro-Ribosome Inactivating Protein; proRIP; peptide linker; cancer; inactivation; eukaryotic ribosome; alpha fragment; beta fragment; inhibitor; protein synthesis; N-glycosidase; glycosidic bond; liver; rat; ribosomal 28S RNA; cellular proliferation; HIV-infected T cell.
                                                                                                            precursors of ribosome inactivating proteins; can be expressed eukaryotic cells without causing cell death
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     99.5%; Score 1024; DB 18; Length 290; 100.0%; Pred. No. 8.4e-101; trive 0; Mismatches 0; Indels 0
                                                                                            DNA encoding pro-ribosome inactivating proteins - inactive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (Updated on 25-MAR-2003 to correct PF field.)
                                                                                                                                                                         Claim 4; Column 91-94; 186pp; English.
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152..162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAW21699 standard; Protein; 290 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              182 FQYIEGEMRTRIRYNRRSA 200
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(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 290 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ricinus communis.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          199;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local
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Region
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Matches
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AAW21699
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The sequences given in AAW21698-710 represent Ribosome Inactivating
Proteins (RIP's), which may be used in the construction of the
proteins possible inverse the proRIP has a selectively removable,
internal peptide linker. The precursor sequence is incapable of
inactivating eukaryotic ribosomes, but can be converted by removal
of the linker into a protein having alpha and beta fragmente and being
capable of inactivating eukaryotic ribosomes. RIPs are potent
inhibitors of eukaryotic protein synthesis. They possess a highly
specific Neglycosidaes activity which cleaves the glycosidic bond of
adenine 4324 of rat liver ribosomal 285 RNa. RIP's selectively inhibit
cellular proliferation of cells, e.g. cancer cells and HIV-infected I
cells. The inactive proRIP proteins make it possible to provide protein
possible. The RIP can be used to make cytocoxic conjugates.

(Updated on 25-MAR-2003 to correct PF field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62 ELSNHABLSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    85 ELSNHAELSVTLALDVTNAXVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 144
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              25 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIFVLPNRVGLPINQRFILV 84
/note= "Position of possible insertion of internal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .
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                                                                                                                                                                                                                                                                                                                                            precursor of maize ribosome-inactivating protein - a ribosome-inactivating protein precursors containing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0; Indels
                  peptide linker sequence"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 2; Column 91-94; 121pp; English.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              182 FOYIEGEMRTRIRYNRRSA 200
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                                                                                                                                                                                                                                                                     Walsh TA;
                                                                                                                                                                            90US-0535636.
95US-0378761.
                                                                                                                                                             92US-0987927.
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Best Local Similarity 100.0
Matches 199; Conservative
                                                                                                                                                                                                                                                                                                                                                                                  internal linker sequences
                                                                                                                                                                                                                                                                       Morgan AER,
                                                                                                                                                                                                                                                                                                         WPI; 1997-309831/28.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 290 AA;
                                                                                                                                                                                                                                   (DOWC ) DOWELANCO.
                                                                                                                           26-JAN-1995;
                                                                                                                                                             09-DEC-1992;
                                                                                                                                                                              11-JUN-1990;
26-JAN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 09-APR-1991
                                                     US5635384-A.
                                                                                         03-JUN-1997
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                                                                                                                                                                                                                                                                                                                                              Inactive
                                                                                                                                                                                                                                                                                                                                                               chimeric
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                                                                                                                                                                                                                                                                       Hey ID,
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13-NOV-1986;
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31-OCT-2002
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                                 EP237676-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAP95639;
                                                                                                                                Piatak M;
                                                                                                                                                                                                                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                                                                                                                             Query Match
         Region
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                                                                                                                                                                                                                                                                                                                                                                                     122 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICTQMISEAAR 181
                                                                                                                                                                                                                                                                                                                          36 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 95
                                                                                                                                                                                                                                                                                                              2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 61
                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence of Ricinus communis castor beans ricin toxin (RT or ricin)
                                                                                                                                                                                     N-terminal methionine free proteins prodn. - by using host transformed with vector to express a methionine-amino-peptidase
                                                                                                                                                                                                                                Ricin A may be produced in a form which lacks an N-terminal Metusing Met-aminopeptidase from E.coli.
                                                                                                                                                                                                                                                                           99.5%; Score 1024; DB B; Length 332; 100.0%; Pred. No. 1e-100; ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Lectin; toxin protein; cytotoxic; cytostatic; castor bean;
                                                                                                                                         Chang SY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAP70838 standard; protein; 332 AA.
                                                                                                                                         Chang S,
                                                                                                                                                                                                               Disclosure; Fig. 4; 20pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                        FOYIEGEMRTRIRYNRRSA 200
                                                                                                                                                                                                                                                                                                                                                                                                                                        216 FOYIEGEMRTRIRYNRRSA 234
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         Ricin A; Met-aminopeptidase.
                                                                              86EP-0307242.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          protein encoded by pRA123
                                                                                               86US-0860330
                                                                                                       85US-0778414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                              Matches 199; Conservative
                                                                                                                                          Bauer KA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (updated)
                                                                                                                                                            WPI; 1987-110172/16.
                                                                                                                                                                                                                                                                                     Local Similarity
                                                                                                                        (CETU ) CETUS CORP.
                                                                                                                                                                                                                                                            332 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ricinus communis.
                          Escherichia coli
                                                                                                                                                                    N-PSDB; AAN70152
                                                                                                                                          Benbassat A,
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                                                                              19-SEP-1986;
                                                                                                06-MAY-1986;
                                                                                                        20-SEP-1985;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      plant toxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                18-FEB-1991
                                                            22-APR-1987
                                           EP219237-A.
                                                                                                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAP70838;
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                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Region
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The full-length sequences encoding ricin A (AAN70520), ricin D (AAN70525), putative ricin E (AAN70526) and RCA (AAN70524) in precursor for form were obten using messenger RNA to obtain a cDNA library, and then probing the library to retrieve the desired cDNA inserts. The library was probed using the 35-mer given in AAN70514. Figure 4 (see AAN70520, AAN70522) shows the nucleotide sequences of three plasmids contg. CDNA inserts obtd. by probing a CDNA library for sequences encoding ricin B using the probing a CDNA library for sequences encoding ricin B using the probing a CDNA library for sequences encoding ricin B using the probing a AAN70517. The cDNA inserts can be placed into expression vectors. Site-directed muserts can be place an ATG start codon and a HindIII site at the beginning of the mature protein (see AAN70518). The coding sequences of the inserts can be ligated into expression coding sequences of the inserts can be ligated into expression (AAN70523) and suitable retroregulators. (AAN70523) and suitable retroregulators. (AAN70523) and suitable retroregulators.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GNYDRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICTQMISEAAR 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        36 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   New non-glycosylated ricin precursor and toxin etc. - are prepd.
by recombinant DNA procedures with specific isolation steps for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ;
0
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAP95639 standard; protein; 332 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Disclosure; Fig 1; 112pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        182 FOYIEGEMRTRIRYNRRSA 200
                                                                           /note="B-chain"
/note="A-chain"
315..332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FOYIEGEMETRIRYNRESA
                                                                                                                                                                                                                                                                                                                        86EP-0308877.
                                                                                                                                                                                                                                                                                                                                                                                                   86US-0837583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            purer and soluble prods.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (updated)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (updated)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (CETU ) CETUS CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI; 1987-265177/38.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            332 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sest Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N-PSDB; AAN70519
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182 FOYIEGEMRTRIRYNRRSA 200
                                                                                                                                                                                                                                                              28..145
                                                                                                                                                                                                                                                                                      'note=
                                                                                                             (updated)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 1995-082036/11.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       554 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N-PSDB; AAQ85386.
                                                                                                                                                                                                                                                                                                                                                                                                            WO9503828-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                   15-JUL-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      02-AUG-1993;
                                                                                                            25-MAR-2003
31-AUG-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                09-FEB-1995.
                                                                                                                                                                                                       Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence
                                                                                         AAR70827;
                                                                                                                                                                                                                                                                                                                                                                   Peptide
                                                                                                                                                                                                                                 Peptide
                                                                                                                                                                                                                                                                                               Peptide
                                                                                                                                                                                                                                                                                                                  Domain
                                                                                                                                                                                                                                                                                                                                                Domain
                                                                                                                                                                                                                                                                 Domain
                                                            AAR7082.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       156 GNYDRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 215
                                                                                                                                                                                                                                                                                                                                                                                                 Recombinant vectors expressing ricin chains or diphtheria toxin -used for prodn. of new immunotoxin conjugates with monoclonal antibodies, having high cell specificity and good extracellular stability.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      96 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           122 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               36 IFPKOYPIINFTTAGATVOSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 95
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Plasmid RA123 (ATCC No. 39799) carries the entire coding sequence for ricin A, as well as codons for 12 AAs joining the A to the B chain. Following modification for ease of manipulation the plasmid was used to construct expression vectors which express the conjugates in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
                                                                                                                                                                                                                                                                                                                                       D, Kaplan D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 10; Length 332;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0; Indels
                                                                                                                                                                                                                                                                                                                                       Greenfield L, Nitecki
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (Updated on 31-OCT-2002 to add missing OS field.) (Updated on 25-MAR-2003 to correct PF field.) (Updated on 25-MAR-2003 to correct Pf field.) (Updated on 25-MAR-2003 to correct PI field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ouery Match

99.5%; Score 1024; DB 10
Best Local Similarity 100.0%; Pred. No. 1e-100;
Matches 199; Conservative 0; Mismatches 0
                      Ricin A encoded by insert from plasmid pRA123.
                                        Plasmid pRA123; ricin-A; ricin-B; cytotoxicity
                                                                                                     ..35
label= leader sequence
                                                                                          ocation/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                           Disclosure, Fig 14; 54pp; English.
                                                                                                                                                                                                                                                                                                                                       Gelfand D, Lawyer FC, Horn G,
Piatak MJ;
                                                                                                                                 'label=A-chain
                                                                                                                                                                315..332
/label=B-chain
                                                                                                                                                     /label=linker
                                                                                                                                                                                                                                                                 84US-0578121.
84US-0578122.
84US-0648759.
84US-0653515.
                                                                                                                                                                                                                                                        84US-0578115.
                                                                                                                                                                                                                                     89EP-0201162
                                                                                                                                                                                                                                                                                                                   (CETU ) CETUS CORPORATION.
  (first entry)
                                                                                                                        .302
                                                                                                                                                                                                                                                                                                                                                                     WPI; 1989-286959/40.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 332 AA;
                                                            Ricinus communis.
                                                                                                                                                                                                                                                                                                                                                                              N-PSDB; AAN91281.
                                                                                                                                                                                                                                                        08-FEB-1984;
08-FEB-1984;
09-FEB-1984;
                                                                                                                                                                                                                                     19-JAN-1989;
                                                                                                                                                                                                                                                                                                20-SEP-1984;
                                                                                                                                                                                                                                                                                      07-SEP-1984;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      host cells.
  13-AUG-1990
                                                                                                                                                                                                                 04-OCT-1989
                                                                                                                                                                                             EP335476-A.
                                                                        Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                    Peptide
                                                                                                                        Peptide
                                                                                                                                            Peptide
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The immunotoxin given in AAR70827 comprises the heavy and light chain variable regions of anti-lens epithelium IgG3 MAb 4197X linked to ricin-A and a hexa-histidine tag. The DNA construct encoding the immunotoxin was expressed from PHB19 in E. coli. (Updated on 25-MAR-2003 to correct PN field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                     Immunotoxin; heavy chain; light chain; variable region; antibody;
ricin.A; cytostatic; cataract; lens opacification; epithelial cell;
pHB19; 4197X; monoclonal antibody; MAb.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       New single chain immuno:toxin - binds specifically to epithelial cells, for inhibiting development of sec. cataracts after extra:capsular cataract extraction.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Wood MS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "MAb 4197X heavy chain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /label= LIGHT
/note= "MAb 419X light chain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /label= Sig_peptide
/note= "phoA signal sequence"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note= "hexa-histidine tail"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gould RM, Kelleher PJ, Wallace TL,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                    AAR70827 standard; Protein; 554 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (HOUS-) HOUSTON BIOTECHNOLOGY INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Disclosure; Fig.4; 68pp; English.
216 FQYIEGEMRTRIRYNRRSA 234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            'label= RICIN-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  148..166
/label= LINKER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /label= HEAVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         94WO-US07919.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        549..554
/label= TAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   93US-0101329.
                                                                                                                                                                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                                                                                          Anti-cataract immunotoxin.
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                                                                                                                          278 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 337
                                                                               338 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 397
                                                                                                             GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 181
                                                      ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 121
2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ricin D (see corresp. AAN90068) found on the EcoRI-HindIII fragment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of DNA from Ricinu communis, Zanibariensis variety. Patent discloses many modifications of ricin in which the lectin binding function of the B chain is diminished or removed, and conjugation to toxins to eliminate cell binding.

(Updated on 25-WAR-2003 to correct PA field.)
                                                                                                                                                                                                                                                                                                                                                                                            Ricin D; Ricinus communis; caster beans; Zanibariensis variety; modified; lectin binding removed; reduced cell binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 562;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Modified ricin molecules and toxin conjugates - in which the lectin binding function of the B chain is removed or diminished to reduce cell binding.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      99.5%; Score 1024; DB 10;
100.0%; Pred. No. 2.1e-100;
tive 0; Mismatches 0;
                                                                                                                                                                                                                                                                   AAP90079 standard; protein; 562 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Disclosure; fig 1; 51pp; English.
                                                                                                                                                                   FOYIEGEMRIRIRYNRRSA 200
                                                                                                                                                                                                                                                                                                                                                                                                                                      Ricinus communis (caster beans)
                                                                                                                                                                                            458 FOYIEGEMRIRIRYNRESA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        88WO-US04238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   87US-0124735
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (GEMY ) GENETICS INST INC.
                                                                                                                                                                                                                                                                                                                          (updated)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 1989-178366/24.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Jones S;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               562 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N-PSDB; AAN90068
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        23-NOV-1988;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    24-NOV-1987;
                                                                                                                                                                                                                                                                                                                          25-MAR-2003
01-NOV-1989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO8904839-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-JUN-1989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Brown EL,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                                              AAP90079;
                                                                                                             122
                                                                                                                                                                     182
                                                        62
                                                                                                                                                                                                                                                                                                                                                                   Ricin D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Loca
Matches
                                                                                                                                                                                                                                         RESULT 9
                                                                                                                                                                                                                                                     AAP90079
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The sequence relates to the amino acid sequence of a modified preproricin protein encoded by AAI64145. The invention relates to a novel toxin (e.g. ricin) based antiviral agent which is toxic to virus-infected
96 BLSNHABLSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 155
                                                            GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note= "Proricin consists of the ricin A chain, a linker peptide, and the ricin B chain. Proricin is protecolytically cleaved between the A chain and the linker to yield mature ricin"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Novel composition comprising toxin e.g., ricin based antiviral compound useful for treating viral infections such as human immunodeficiency
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    304..565
|Jabel= Ricin_B_chain
|note= "Galactose/N-acetylgalactosamine-binding lectin"
                                                                                                                                                                                                                                                                                                                 Castor bean plant; preproricin; ricin; A chain; B chain; human immunodeficiency virus infection; HIV; toxin; antiviral agent; retroviral infection; anti-HIV; virucide; viral protease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /label= Linker_peptide
296..297
/label= HIV_protease_cleavage_site
                                                                                                                                                                                                                                                                                                                                                                           Chimeric - Ricinus communis
Chimeric - Human immunodeficiency virus type 2.
                                                                                                                                                                                                                                                                                         Modified castor bean preproricin (SEQ ID 10).
                                                                                                                                                                                                                                                                                                                                                                                                                                                 /label= Signal_peptide
25..565
/label= Proricin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 25..291
/label= Ricin A chain
/note= "N-glycosidase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Example 1; Page 59-63; 66pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                      AAG78304 standard; Protein; 565 AA.
                                                                                                    182 FOYIEGEMRTRIRYNRRSA 200
                                                                                                                           216 FQYIEGEMRTRIRYNRSA 234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (BECH-) BECHTEL BWXT IDAHO LLC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     15-FEB-2001; 2001WO-US05282.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 16-FEB-2000; 2000US-0182759.
                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              292..303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ward TE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI; 2001-581908/65.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     N-PSDB; AAI64145.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           virus infection.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO200160393-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Cleavage-site
                                                                                                                                                                                                                                                              27-NOV-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           23-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Keener WK,
                                                                                                                                                                                                                                   AAG78304;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                     Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Protein
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0; Gaps

0; Indels

199; Conservative

9,5

62 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 121

16 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  122 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             145 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICTQMISEAAR 204
cells, but non-toxic to uninfected cells. The invention has anti-HIV and virucide activities. The agent is able to enter all HIV susceptible cells, and not just cells known to act as host cells for the virus. The antiviral agent remains inert in a cell unless the cell is infected with the HIV virus, where the viral protease activates it. Ricin's mechanism of action is through inactivation of cellular ribosomes and enhancement of binding of the antiviral agent to galactose residues on cell surfaces, and its cellular internalisation. The invention is useful for treating human immunodeficiency virus infection and other viral
                                                                                                                                                  infections, especially retroviral infections. The antiviral agent is activated in viral particles or early-stage infected cells, Killing the cells upon infection and effectively preventing the integration of the viral genome into the host genome thereby preventing the latency/rebound
                                                                                                                                                                                                                                                                                                                                                  2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
                                                                                                                                                                                                                                                                                                                                                                      85 ELSNHAELSVTLALDVTNAYVVGTRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG
                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                 99.5%; Score 1024; DB 22; Length 565; 100.0%; Pred. No. 2.1e-100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Lectin, toxin protein; cytotoxic; cytostatic; castor bean;
                                                                                                                                                                                                                                                                                                                 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence of Ricinus communis (castor bean) Ricin toxin (RT or ricin) B precursor encoded by pRT38.
                                                                                                                                                                                                                                                                                           100.0%; Preq. ....
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAP70326 standard; Protein; 576 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FQYIEGEMRTRIRYNRRSA 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note= "B-chain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FOYIEGEMRTRIRYNRRSA 223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               'note= "A-chain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            'note= "leader"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             86EP-0308877.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              86US-0837583.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (updated)
(first entry)
                                                                                                                                                                                                                                                                                                                 Matches 199; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            315..576
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              36..302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (CETU ) CETUS CORP.
                                                                                                                                                                                                                                                                                                    Best Local Similarity
                                                                                                                                                                                                                                                      565 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ricinus communis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              J7-MAR-1986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13-NOV-1986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 25-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              plant toxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              23-SEP-1987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               21-MAY-1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EP237676-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAP70326;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   182
                                                                                                                                                                                                                                                      Seguence
                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                       problem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 11
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The full length sequences encoding ricin A (AAN70520), ricin D CCC (AAN70525) putative ricin E (AAN70526) and RCA (AAN70524) in precursor CCC (AAN70525) putative ricin E (AAN70526) and RCA (AAN70524) in precursor then probing the library to retrieve the desired cDNA inserts. The Library was probed using the 35-mer given in AAN70514. Figure 4 (see AAN70522), AAN70521, Shows the nucleotide sequences of three plasmids containing cDNA inserts obtained by probing a cDNA library for sequences encoding ricin B using the probe in AAN70517. The cDNA inserts can be placed into expression vectors. Site-directed mutagenesis may be used to place an ATG start codon and a HindlII site at the beginning of the mature protein, (see AAN70518). The coding sequences of the inserts can be ligated into expression containing the PDNA promoter operator and leader sequence (AAN70523) and sultable retroregularors.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       156 GNYDRIBQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 62 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     96 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          122 GNYDRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHBIPVLPNRVGLPINQRFILV
                                                                                                       New non-glycosylated ricin precursor and toxin etc. - are prepd
by recombinant DNA procedures with specific isolation steps for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99.5%; Score 1024; DB 8; Length 576; 100.0%; Pred. No. 2.1e-100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ricin, cytotoxin, hybrid protein, cell delivery, cell binding ligand, translocation domain, diphtheria toxin interleukin-2, T-cell lymphoma, organ rejection, therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              100.0%; Prea. ...
                                                                                                                                                                               Disclosure; Fig 14(1-2); 112pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /label= Sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAW25787 standard; Protein; 576 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   36..302
/label= A-domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   182 FQYIEGEMRTRIRYNRRSA 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    216 FOYIEGEMRTRIRYNRRSA 234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (updated)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches 199; Conservative
                                                                                                                                            purer and soluble prods.
                                                  WPI; 1987-265177/38.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  576 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Castorbean ricin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ricinus communis.
                                                                       N-PSDB; AAN70526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        27-MAR-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       25-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAW25787;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
                   Piatak M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAW25787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               임
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       96 ELSNHAELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   36 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             This polypeptide comprises the castorbean cytotoxin, ricin.

CDNA (see AAT91638) encoding the enzymatic A domain and a portion of the A-to-B linker peptide of ricin was used to construct a ricin-diptheria toxin B' interleukin-2 gene that was expressed in B. coli. The hybrid protein can be isolated and used to treat conditions involving over-production of cells bearing IL2 receptors, such as certain T-cell lymphomas and organ transplant rejection crises. The hybrid inactivates ribosomes in cells bearing IL2 receptors, resulting in cessation of protein synthesis and death of target cells. Claimed hybrid proteins comprise a translocation or polypeptide toxin. The hybrid molecules can be used for the delivery of agents (e.g. therapeutic genes, toxins, detectable claimed will be effective in relatively low doses, since a that the hybrid will be effective in relatively low doses, since a chigh proportion of the substance of interest will be taken into the targeted cells. The hybrid molecules can be manufactured as a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2 IFPKOYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                             New hybrid molecules for delivery of agents to cells - comprise a binding domain of a cell binding ligand and a portion of a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    single hybrid recombinant protein, permitting reproducibility, consistency, and the precise control of composition. (Updated on 25-MAR-2003 to correct PF field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99.5%; Score 1024; DB 18; Length 576; 100.0%; Pred. No. 2.1e-100; .ive 0; Mismatches 0; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Example 4; Fig 11A-B; 30pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                translocation domain of a protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FQYIEGEMRTRIRYNRRSA 200
                                 315..576
/label= B-domain
303..314
/label= Linker
                                                                                                                                                                                                           84US-0618199.
85US-0726808.
85US-0742554.
89US-0456095.
90US-0538276.
                                                                                                                                                           93US-0102387.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             199; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 1997-470103/43.
                                                                                                                                                                                                                                                                                                                                      (SERA-) SERAGEN INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          576 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                         N-PSDB; AAT91638.
                                                                                                                                                            04-AUG-1993;
                                                                                                                                                                                                                                                                                   14-JUN-1990;
04-AUG-1993;
                                                                                                                         16-SEP-1997.
                                                                                                                                                                                                                                                                  22-DEC-1989;
                                                                                      US5668255-A
                                                                                                                                                                                                27-JUN-1991
                                                                                                                                                                                                                                 25-APR-1985
                                                                                                                                                                                                                                                 07-JUN-1985
                                                                                                                                                                                                                07-JUN-1984
                                                                                                                                                                                                                                                                                                                                                                        Murphy JR;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local S
                                    Domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
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Recombinant, hybrid; binding domain; ligand; animal cell; diphtheria; translocation domain; botulinum; neurotoxin; ricin; cholera; tetanus; shiga-like toxin; pertussis; translocation; cytoplasmic membrane; HIV; cytosol; therapy; gentusic deficiency disease; enzyme; co-factor; poison; adipocyte; cancer; virus; infection; antibody.
                                                                                                                                                                                                                                                                                                                                                                                   Recombinant DNA molecule encoding a three part hybrid protein used in the treatment of Aids and genetic deficiency diseases -
                                             AAY55892 standard; Protein; 576 AA.
216 FQYIEGEMRTRIRYNRRSA 234
                                                                                                                                                                                                                                                     840S-0618199.
910S-0722484.
85US-0726808.
85US-0742554.
89US-0456095.
                                                                                                                                                                                                                              95US-0488246.
                                                                                                                                                                                                                                               93US-0102387
                                                                                                                                                                                                                                                                                                    90US-0538276
                                                                                15-FEB-2000 (first entry)
                                                                                                 Castor bean ricin toxin.
                                                                                                                                                                                                                                                                                                                                                         WPI; 1999-632431/54.
                                                                                                                                                                                                                                                                                                                      (SERA-) SERAGEN INC
                                                                                                                                                                         Ricinus communis.
                                                                                                                                                                                                                                                                                                                                                                   N-PSDB; AAZ30663.
                                                                                                                                                                                                                                                                        25-APR-1985;
07-JUN-1985;
22-DEC-1989;
                                                                                                                                                                                                                              07-JUN-1995;
                                                                                                                                                                                          US5965406-A.
                                                                                                                                                                                                                                                04-AUG-1993;
                                                                                                                                                                                                                                                        07-7UN-1984;
                                                                                                                                                                                                                                                                                                     14-JUN-1990;
                                                                                                                                                                                                            12-OCT-1999
                                                                                                                                                                                                                                                                                                                                        Murphy JR;
                                                               AAY55892;
                         RESULT 13
                                    AAY55892
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protein comprising three parts: (a) the first part comprises a nybrid protein comprising three parts: (a) the first part comprises a portion of the binding domain of a cell-binding polypeptide ligand allowing the hybrid protein to bind to an animal cell; (b) the second part comprises a portion of a translocation domain of a naturally occurring protein celeted from diphtheria toxin, botulinum neurotoxin, ricin, cholera toxin, IT toxin, C3 toxin, shiga-like toxin, pertussis toxin and tetanus toxin, in toxin, c3 toxin, shiga-like toxin, pertussis toxin and tetanus toxin, which translocate the third part of the across the cytoplasmic membrane into the cytosol of the call; and (c) the third part comprises a polypeptide entity to be introduced into the cell, which is non-native to the naturally occurring protein of (b). This sequence represents the castor bean ricin toxin sequence for use in generating the hybrid of the invention. The hybrid molecule enables the direction of appropriate therapy to affected cells, allowing them to function properly and calleviate or cure the diseases. The hybrid is especially used in treating genetic deficiency diseases, by delivering to affected cells an enzyme supplying the missing function, to supplementing cellular levels of a particular enzyme or a scarce precence or cented contains and the call of the contains to other noisons to desire precures or a scarce precence or each active or a scarce precence or each active or a scarce precence or each active or a scarce precence or a scarce or other poisons to destroy particular cells (such as adipocytes, cancer cell, or virus infected-cells), to counteracting viral infections such as HIV, by introducing appropriate antibodies to viral proteins. It is also involved in the process of getting non-therapeutic substances such as detectable labels into cells. The invention relates to a recombinant DNA molecule encoding a hybrid

Example 4; Fig 11; 31pp; English.

576 AA; Sequence

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121
                                                                                                                                                        155
                                                                                                                                                                                      181
                                                                                                                                                                                                                  156 GNYDRLEOLAGNIRENIELGNGPLEEAISALYYYSTGGTOLPTLARSFIICIOMISEAAR 215
                                                              61
                                                                                          95
                                                              2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
                                                                                                                         ELSNHAELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFIDVQNRYTFAFG
                                                                                                                                                      96 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG
                                                                                      36 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV
                                                                                                                                                                                      GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR
                               Gaps
                               . 0
Length 576;
                               Indels
Score 1024; DB 20;
Pred. No. 2.1e-100;
                                ;
0
         100.0%; Pred. worthes
                                                                                                                                                                                                                                                  FOYIEGEMRIRIRYNRRSA 200
                                                                                                                                                                                                                                                                                216 FOYIEGEMRIRIRYNRRSA 234
 99.5%;
                               Matches 199; Conservative
                  Similarity
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AAY78592 standard; Protein; 576 AA RESULT 14 AAY78592

AAY78592;

(first entry) 05-MAY-2000

Ricinus communis ricin protein sequence.

Ricin; toxin; hybrid protein; translocation domain; cell destruction; cell binding domain; genetic deficiency disease; cell targetting; cancer; adipocyte; enzyme delivery; anti-viral; HIV.

Ricinus communis.

US6022950-A

08-FEB-2000

95US-0479510 07-JUN-1995; 07-JUN-1984;

84US-0618199. 91US-0722484. 85US-0726808. 85US-0742554. 89US-0456095. 90US-0538276. 27-JUN-1991; 25-APR-1985; 07-JUN-1985; 22-DEC-1989; 14-JUN-1990;

(SERA-) SERAGEN INC

93US-0102387

04-AUG-1993;

Murphy JR;

WPI; 2000-160390/14. N-PSDB; AAZ90019. New two-part hybrid protein comprising a translocation domain and a cell-binding domain, for treating genetic deficiency diseases, cancer and HIV infections

Example 4; Fig 11; 32pp; English.

This sequence represents the Ricinus communis ricin protein sequence. The toxin can be included in the hybrid protein of the invention and used to destroy or modify the cell that the hybrid protein is targeted to. The hybrid protein comprises a first part which is a portion of the binding domain of a cell-binding ligand, effective to cause the hybrid molecule to bind to a cell of an animal. The second part comprises a portion of a translocation domain of a naturally occurring protein (e.g. the translocation domain of diphtheria toxin) the second part translocates the third part across the cytoplasmic membrane and into the cytosol of

WO200160393-A1

Protein

Peptide

23-AUG-2001

303..314 /label= Linker_peptide /note= "Cleaved during activation of ricin" 315.576 /label= Ricin_B_chain /note= "Galactose/N-acetylgalactosamine-binding lectin"

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the cell. The third part comprises a chemical entity to be introduced into the cell, where each of the first and third part is non-native with respect to naturally occurring protein, and the covalent bond attaching the second and third part is cleavable. The toxin represented by the present sequence can form part of the third portion of the hybrid protein. The cell binding domain binds to a specific cell and the translocation domain transfers the hybrid molecule across the cell membrane into the cytosol. The third part of the protein, linked to the translocation domain through a cleavable bond, can then carry out its translocation domain through a cleavable bond, can then carry out its function. The hybrid molecules are useful for treating genetic deficiency diseases by delivering to affected cells an enzyme supplying the missing function, to supplement cellular levels of a particular enzyme or a cearce precursor or cofactor, to direct toxins or other poisons to destroy particular cells (such as adipocytes, cancer cells, or virus-infected cells), and to counteract viral infections such as HIV by
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100.0%; Pred. No. 2.1e-100;
iive 0; Mismatches 0;
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/note= "N-glycosidase"
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SQ Sequence 576 AA;

Query Match 99.5%; Score 1024; DB 22; Length 576;

Best Local Similarity 100.0%; Pred. No. 2.1e-100;

Matches 199; Conservative 0; Mismatches 0; Indels 0; Gaps

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QY 2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 61

Db 36 IFPKQYPIINFTTAGATVQSYTNFIRANGRLTTGADVRHEIPVLPNRVGLPINQRFILV 61

CD 36 ELSNHAELSVTLALDVTNAXVQSYRGSBAFFHPDNQEDAEAITHLFTDVQNRYFFAFG 121

Db 96 ELSNHAELSVTLALDVTNAXVQSYRAGNSAXFFHPDNQEDAEAITHLFTDVQNRYFFAFG 155

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 Search completed: February 10, 2004, 16:22:29 Job time : 35.0993 secs

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2. /cgn2_6/ptodata/1/iaa/5B_COMB.pep:*

3. /cgn2_6/ptodata/1/iaa/6A_COMB.pep:*

1. /cgn2_6/ptodata/1/iaa/BTOMB.pep:*

2. /cgn2_6/ptodata/1/iaa/PCTUS_COMB.pep:*

2. /cgn2_6/ptodata/1/iaa/PCTUS_COMB.pep:*

3. /cgn2_6/ptodata/1/iaa/PCTUS_COMB.pep:*
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
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US-08-646-360-1

US-08-839-765-1

US-09-610-838-1

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Gapop 10.0 , Gapext 0.5
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| 422224 | ULT 1 08-356-786-8 equence 8, A arent No. 58 arent No. 58 APPLICANT: APPLICANT: APPLICANT: APPLICANT: APPLICANT: APPLICANT: APPLICANT: APPLICANT: APPLICANT: APPLICANT: APPLICANT: APPLICANT: APPLICANT: APPLICANT: COUNTRY: ZIF: 07 COUNTRY: ZIF: 07 COUNTRY: ZIF: 07 COUNTRY: ZIF: 07 COUNTRY: COUNTRY: APPLICAT AP | y Match Local Si hes 200; |
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: Patentin Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
PPLICATION NUMBER: US/07/901,707
FILING DATE: 19920619
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CLASSIFICATION: 435
PRICA APPLICATION DATA:
APPLICATION NUMBER: US 07/787,567
FILING DATE: 04-NOV-1991
ATTORNEY/AGENT INFORMATION:
NAME: NO. 5376546and, Greta E.
REGISTRATION NUMBER: 35,302
REFERENCE/DOCKET NUMBER: 27129/30910
TELECOMMUNICATION INPORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                             181 RFQYIEGEMRTRIRYNRRSA 200
                                                                                                                                                          183 RFQYIEGEMRTRIRYNRRSA 202
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Patent No. 5376546
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TELEFAX: (312) 984-5750
TELEX: 25-3856
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
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AMINO ACID
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Illinois
                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
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1 MIFPKOYPIINFTTAGATVOSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFIL 60
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                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 10, Application US/08356786

Patent No.-5877305
GENERAL INFORMATION:
APPLICANT: Huston, James S.
APPLICANT: Houston, L. L.
APPLICANT: Rouston, L. L.
APPLICANT: Ring, David B.
TITLE OF INVENTION: Biosynthetic Binding Protein for Cancer TITLE OF INVENTION: Marker
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             B: Edmund R. Pitcher, Testa, Hurwitz, & Thibeault
Exchange Place, 53 State Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/356,786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME: Pitcher, Edmund R.
REGISTRATION NUMBER: 27,829
REFERENCE/DOCKET NUMBER: CRP-053
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 248-7000
TELEFAX: (617) 248-7100
INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/831,967
FILLING DATE: 06-FEB-1992
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                          181 RFQYIEGEMRTRIRYNRRSA 200
                                                                                                                                                                                                                                                                                     181 RFQYIEGEMRTRIRYNRRSA 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               534 amino acids
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-08-356-786-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NUMBER OF SEQUENCES: 1 CORRESPONDENCE ADDRESS: ADDRESSEE: Edmund R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
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                                                                                                                                                                                                                                                                                                                                                                  RESULT 2
US-08-356-786-10
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Best Local
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APPLICANT: Better, Marc D.
APPLICANT: Better, Marc D.
APPLICANT: Carroll, Steve F.
TITLE OF INVENTION: Materials Comprising and Methods of
TITLE OF INVENTION: Composition and Use for Ribosome-Inactivating Proteins
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   62 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 121
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                                                                                                                                                                                                                                                     CORRESPONDENCE ADDRESS:
ADDRESSEE: Marshall, O'Toole, Gerstein, Murray & ADDRESSEE: Bicknell
                                                                                                                                                                                                                                                                                                                                                            STREET: Two First National Plaza, 20 South Clark STREET: Street
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62 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 121
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122 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIIGIQMISEAAR 181
                                         121 GNYDRLEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 180
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                                                                                                                                                                                                                                                                                               GENERAL INFORMATION:

APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Studmika, Gary M.
TITLE OF INVENTION: Immunotoxins Comprising Ribsome-Inactivating TITLE OF INVENTION: Proteins
NUMBER OF SEQUENCES: 140
CORRESPONDENCE ADDRESS:
ADDRESSEE: Marshall, O'Toole, Gerstein, Murray & Borun
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99.5%; Score 1024; DB 1; Length 267; 100.0%; Pred. No. 8.3e-112; Live 0; Mismatches 0; Indels (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8: Marshall, O'Toole, Gerstein, Murray & Borun 6300 Sears Tower, 233 South Wacker Drive
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CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/425,336
FILING DATE: 18-APR-1995
CLASSIFICATION: 530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FILING DATE: 18-APR-1995
CLASSIFICATION: 530
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/064,691
FILING DATE: 12-MAY-1993
APPLICATION NUMBER: US 07/901,707
FILING DATE: 19-UN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/787,567
FILING DATE: 04-NOV-1991
ATTORNEY/AGENT INPORRATION:
NAME: MGYGEN, THOMAS C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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                                                                                           182 FQYIEGEMRTRIRYNRRSA 200
                                                                                                                                                                                                                                                      Sequence 1, Application US/08425336 Patent No. 5621083
                                                                                                                                       181 FOYIEGEMRTRIRYNRRSA 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME: Meyers, Thomas C.
REGISTRATION NUMBER: 2-36,9
REFERENCE/DOCKET NUMBER: 31
TELECOMMUNICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    INFORMATION FOR SEQ ID NO: 1
SEQUENCE CHARACTERISTICS:
LENGTH: 267 amino acids
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Best Local Similarity
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                                                                                                                                                                                                                                                                         GENERAL INCRMATION:
APPLICANT: Bernhard, Susan L.
APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Carroll, Stephen F.
APPLICANT: Lane, Julie A.
APPLICANT: Let, Shau-Ping
TITLE OF INVENTION: Materials Comprising and Methods of
TITLE OF INVENTION: Preparation and Use for Ribosome-Inactivating Proteins
NUMBER OF SEQUENCES: 101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 120
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2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLFTGADVRHEIPVLPNRVGLPINQRFILV 61
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE PATENTIN STILLS
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/988,430
FILING DATE: 19921209
CLASSIFICATION 1435
PRIOR APPLICATION TAMBER: US 07/901,707
FILING DATE: 19-JUN-1992
PRIOR APPLICATION NUMBER: US 07/787,567
FILING DATE: 04-NOV-1991
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADDRESSEE: Marshall, O'Toole, Gerstein, Murray & ADDRESSEE: Bicknell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STREET: Two First National Plaza, 20 South Clark
STREET: Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         99.5%; Score 1024; DB 1; L 100.0%; Pred. No. 8.3e-112; tive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE/DOCKET NUMBER: 31133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME: No. 5416202and, Greta E. REGISTRATION NUMBER: 35302
                                                                                                     181 FQYIEGEMRTRIRYNRRSA 199
                                                                                                                                                                                                                                Sequence 1, Application US/07988430 Patent No. 5416202
                                                                        182 FOYIEGEMRTRIRYNRRSA 200
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELEPHONE: (312) 346-5750
TELERX: (312) 984-9740
TELEX: 25-3856
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       : 267 amino acids
AMINO ACID
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity
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Illinois
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amino acid
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COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MOLECULE TYPE: protein
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ADDRESSEE: McAndrews
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Chicago
: Illinois
RY: USA
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                                                                                                                                                                                                                                                                                RESULT 7
US-08-477-484B-1
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2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 61
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                                                                                                                                                                                    Sequence 1, Application US/08488113B
Patent No. 5744580
GENERAL INFORMATION:
APPLICANT: Better, Marc D.
APPLICANT: Studmika, Gary M.
TITLE OF INVENTION: Immunocoxins Comprising Ribosome-Inactivating
NUMBER OF SEQUENCES: 169
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 1024; DB 1; Length 267; Pred. No. 8.3e-112; 0; Mismatches 0; Indels (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOFTWARE PATENTIN Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/488,113B
FILING DATE: 07-JUN-1995
CLASSIFICATION: 530
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/425,336
FILING DATE: 18-APR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/064,691
APPLICATION NUMBER: US 08/064,691
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REGISTRATION NUMBER: 32,918
REFERENCE/DOCKET NUMBER: 11022US07/200-70.P3.C2A
                                                                                                                                                                                                                                                                                                                                                                                                3: McAndrews, Held & Malloy, Ltd.
500 West Madison Street, 34th floor
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FILING DATE: 12-MAY-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/988, 430
FILING DATE: 09-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/901, 707
FILING DATE: 19-UNN-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/901, 707
FILING DATE: 04-NOV-1991
ATTORNEY, AGENT, INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                            182 FQYIEGEMRTRIRYNRRSA 200
                                                                                               181 FOYIEGEMRTRIRYNRRSA 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELECOMMUNICATION INFORMATION:
TELEPHONE: 312/707-8889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME: McNicholas, Janet M. REGISTRATION NUMBER: 32,91
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INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
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MEDIUM TYPE: Floppy disk
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Best Local Similarity 100.
Matches 199; Conservative
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COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                    Chicago
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US-08-488-113B-1
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1 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 60

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61 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 120
                                                                                                                                         122 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 181
62 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Studnika, Gary M.
TITLE OF INVENTION: Immunotoxins Comprising Ribosome-Inactivating
TITLE OF INVENTION: Proteins
NUMBER OF SEQUENCES: 169
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER: INP PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
OOTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/477,484B
FILING DATE: 07-JUN-1995
CLASSIFICATION: 530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              E: McAndrews, Held & Malloy, Ltd.
500 West Madison Street, 34th floor
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PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/988,430
FILING DATE: 09-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/901,707
FILING DATE: 19-JUN-1992
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APPLICATION NUMBER: US 08/425,336
FILING DATE: 18-APR-1995
FILING DATA: 10-APR-1995
APPLICATION NUMBER: US 08/064,691
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FILING DATE: 04-NOV-1991
ATTORNEY/AGENT INFORMATION:
NAME: MCNicholas, Janet M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        UUMBER: US 08/064,691
12-MAY-1993
                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 1, Application US/08477484B Patent No. 5756699
                                                                                                                                                                                                                   182 FQYIEGEMRTRIRYNRRSA 200
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REFERENCE/DOCKET NUMBER: 11
FELECOMMUNICATION INFORMATION:
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INFORMATION FOR SEQ ID NO: 1:
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61 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNOEDAEAITHLFTDVQNRYTFAFG 120
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                                                                                                                                                                                                                                                2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 61
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Sequence 1, Application US/08839765
Patent No. 6146631
GENERAL INFORMATION:
APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Studnika, Gary M.
TITLE OF INVENTION: Immunotoxins Comprising Ribosome-Inactivating TITLE OF INVENTION: Proteins
NUMBER OF SEQUENCES: 169
CORRESPONDENCE ADDRESS:
ADDRESSEE: MCANGREW, Held & Malloy, Ltd.
                                                                                                                                  Length 267;
                                                                                                                                                                                            0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CURRENT APPLICATION DATA:
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/839,765
FLING DATE: 1.5-APR.1997
CLASSIFICATION NUMBER: US/08/425,336
FILING DATE: 18-APR.1997
FILING DATE: 18-APR.1995
PRICATION NUMBER: US/08/425,336
FILING DATE: 12-APR.1995
PRICATION NUMBER: US/08/425,336
FILING DATE: 12-APR.1995
PRICATION NUMBER: US/08/430
FILING DATE: 12-APR.1993
PRICATION NUMBER: US/07/986,430
FILING DATE: 09-DEC.1992
PRICATION NUMBER: US/07/986,430
FILING DATE: US/07/986,430
FILING DATE: US/07/986,430
FILING DATE: US/07/986,430
FILING DATE: US/07/986,430
FILING DATE: US/07/986,430
FILING DATE: US/07/986,430
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FILING DATE: US/07/986,430
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REGISTRATION NUMBER: 32,918
REFERENCE/DOCKET NUMBER: 11022US09/200-70.P3.C3
TELECOMMUNICATION INFORMATION:
                                                                                                                                  99.5%; Score 1024; DB 2; I 100.0%; Pred. No. 8.3e-112; Live 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3: McAndrews, Held & Malloy, Ltd.
500 West Madison Street, 34th floor
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FILING DATE: 19-JUN-1992
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182 FQYIEGEMRTRIRYNRRSA 200
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                                                                                                                                                                                            Matches 199; Conservative
                 MOLECULE TYPE: protein US-08-646-360-1
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APPLICATION NUMBER:
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  amino acid
                                                                                                                                     Query Match
Best Local Similarity
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                                                                                                                                                                                                                                          61 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 120
                                                                                                                                                                                                                                                                                                    GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 181
                                                                                                                1 IFPKQYPIINFTTAGATVQSYINFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 60
                                                                                2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 61
                            Gaps
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Sequence 1, Application US/08646360

Patent No. 5837491

GENERAL INFORMATION:

APPLICANT: Better, Marc D.

APPLICANT: Carroll, Stephen F.

APPLICANT: Studnika, Gary M.

TITLE OF INVENTION: Immunotoxing Comprising Ribosome-Inactivating

TITLE OF INVENTION: Proceins
                          0; Indels
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CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/646,360
FILING DATE: 13-MAY-1996
CLASSIFICATION: 530
RIOR APPLICATION DATA:
APPLICATION NUMBER: PCT/US94/05348
FILING DATE: 12-MAY-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: BC7/US94/05348
FILING DATE: 12-MAY-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/064,691
FILING DATE: 12-MAY-1993
RIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/988,430
FILING DATE: 09-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION DATA:
FILING DATE: 19-UNN 1992
PRIOR APPLICATION DATA:
ATTING DATE: 19-UNN 1992
FILING DATE: 19-UNN 1992
FILING DATE: 19-UNN 1992
FILING DATE: 19-UNN 1992
FILING DATE: 19-UNN 1992
FILING DATE: 19-UNN 1992
FILING DATE: 19-UNN 1991
ATTING DATE: 04-NOV-1991
ATTING DATE: 04-NOV-1991
100.0%; Pred. No. 8.3e-112;
Live 0; Mismatches 0;
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500 West Madison Street, 34th floor
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REFERENCE/DOCKET NUMBER: 200-70.P4
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                 181 FQYIEGEMRTRIRYNRRSA 199
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INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
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312/707-9155
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Best Local Similarity 100.
Matches 199; Conservative
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COUNTRY: USA
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FILING DATE: 18-AUG-1998
APPLICATION NUMBER: 08/646,360
FILING DATE: 13-MAY-1996
APPLICATION NUMBER: PCT/US94/05348
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PRIOR APPLICATION DATA:
PRIOR APPLICATION DATA:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/787,567
ELLING DATE: 04-NOV-1991
ATTORNEY/AGENT INFORMATION:
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COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 1, Application US/09610838 Patent No. 6376217
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                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity 100.0
Matches 199; Conservative
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COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                    MOLECULE TYPE: protein
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COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADDAL
STREET: SOU
TIMY: Chicago
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                                                                                                                                                                                                                                                                                                                                                                         1 IFPKOYPIINFTTAGATVOSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINORFILV 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Standika, Gary M.
TITLE OF INVENTION: Immunotoxins Comprising Ribosome-Inactivating
TITLE OF INVENTION: Proteins
                                                                                                                                                                                                                                                 Length 267;
                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                            99.5%; Score 1024; DB 3; L 100.0%; Pred. No. 8.3e-112; tive 0; Mismatches 0;
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500 West Madison Street, 34th floor
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PRIOR APPLICATION DATE:
FILING DATE: 09-DEC-1992
PRIOR APPLICATION DATA:
PRIOR APPLICATION DATA:
FILING DATE: 19-UNA-1992
FILING DATE: 19-UNA-1992
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APPLICATION NUMBER: 08/646,360
FILING DATE: 13-MAY-1996
APPLICATION NUMBER: PCT/US94/05348
FILING DATE: 12-MAY-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US 08/064,691
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MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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Patent No. 6146850
GENERAL INFORMATION:
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                                         TELEX: 650 388-1248
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 267 amino acids
TYPE: amino acid
312/707-8889
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                           312/707-9155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
                                                                                                                                                           linear
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STATE: Illinois
COUNTRY: USA
                                                                                                                                                                                                                                                                   Similarity
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    TELEPHONE:
                                                                                                                                                         TOPOLOGY:
                         TELEFAX:
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US-09-136-389-1
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61 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 120
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APPLICANT: Better, Marc D.
APPLICANT: Carroll, Stephen F.
APPLICANT: Carroll, Stephen F.
APPLICANT: Studnika, Gary M.
TITLE OF INVENTION: Immunotoxins Comprising Ribosome-Inactivating
TITLE OF INVENTION: Proteins
NUMBER OF SEQUENCES: 173
CORRESPONDENCE ADDRESS:
ADDRESSEE: MCANDREWS, Held & Malloy, Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    99.5%; Score 1024; DB 3; Length 267; 100.0%; Pred. No. 8.3e-112; cive 0; Mismatches 0; Indels
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CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/610,838
FILING DATE: 06-JUL-2000
CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            B: McAndrews, Held & Malloy, Ltd.
500 West Madison Street, 34th floor
NAME: MCNicholas, Janet M.
REGISTRATION NUMBER: 32,918
REFERENCE/DOCKET NUMBER: 200-70.P4
TELECOMMUNICATION INFORMATION:
TELEPRA: 312/707-9155
TELER PAX: 312/707-9155
TELEX: 650 388-1248
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 267 anino acids
TYPE: amino acid
TYPE: amino acid
TOPOLOGY: linear
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PCT/US92/09487
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COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 27, Application US/08378761A
Patent No. 5635384
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CORRESPONDENCE ADDRESS:
ADDRESSEE: ANDREA T. BORUCKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          : 267 amino acide
AMINO ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 100.0
Matches 199, Conservative
                                                                               APPLICATION NUMBER: PC
FILING DATE: 19921104
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MOLECULE TYPE: protein
PCT-US92-09487-1
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                                                                                                      FILING DATE: 1:
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GENERAL INFORMATION:
APPLICANT: Bernhard, Susan L.
APPLICANT: Carroll, Stephen F.
APPLICANT: Lane, Julie A.
APPLICANT: Lane, Julie A.
APPLICANT: Lane, Julie A.
APPLICANT: Lane, Materials Comprising and Methods of TITLE OF INVENTION: Materials Comprising and Methods of TITLE OF INVENTION: Preparation and Use for Ribosome-Inactivating Proteins NUMBER OF SEQUENCES: 101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 121
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                                                                                                                                                                 PALCH APPLICATION DATE:

PELLOR DATE: 19-JUN-1992
PRIOR APPLICATION DATA:

PELLING DATE: 19-JUN-1992
PRIOR APPLICATION DATA:

APPLICATION NUMBER: US 07/787,567
FILING DATE: 04-N0V-1991
ATTORNEY/AGENT INFORMATION:

NAME: MCNicholas, Janet M.

REGISTRATION NUMBER: 32,918
REFERENCE/DOCKET NUMBER: 200-70.P4
TELEPHONE: 312/707-8889
TELEPHONE: 312/707-8889
TELEPHONE: 312/707-9155
TELEX: 650 388-1248
INFORMATION FOR SEQ ID NO: 1:
                                                                               PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/988,430
FILING DATE: 09-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/901,707
FILING DATE: 12-MAY-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/064,691
FILING DATE: 12-MAY-1993
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COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               : 267 amino acids
amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE CHARACTERISTICS:
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STATE: Illinois
COUNTRY: USA
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GENERAL INFORMATION:

GENERAL INFORMATION:

APPLICANT: MALSH, TERENCE A

APPLICANT: MORGAN, ALICE ER

APPLICANT: MORGAN, ALICE ER

TITLE OF INVENTION: REBOSOME-INACTIVATING PROTEINS, INACTIVE

TITLE OF INVENTION: PRECURSOR FORMS THEREOF, A PROCESS FOR MAKING A METHOD OF

TITLE OF INVENTION: USING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0
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COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTMARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                       PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/901,707
FILING DATE: 19-UN-1992
PRIOR APPLICATION NUMBER: US 07/787,567
FILING DATE: 04-NOV-1991
ATTORNEY AGENT INFORMATION:
NAME: NOLAND, Greta E
REGISTRATION NUMBER: 31332
REGISTRATION NUMBER: 3133
FELECHOMINICATION INFORMATION:
TELEPHONE: (312) 346-5750
TELEPHONE: (312) 346-576
TELEPHONE: (312) 346-576
TELEPHONE: (312) 364-9740
TELER : 25-3856
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 25-3816
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Search completed: February 10, 2004, 16:29:35
                                                                                                                        INFORMATION FOR SEQ ID NO: 27:
ATTORNEY/AGENT INFORMATION:
                                                                                                                                               SEQUENCE CHARACTERISTICS:
LENGTH: 290 amino acids
TYPE: amino acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                  Query Match 99.5%
Best Local Similarity 100.0
Matches 199; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                   TOPOLOGY: linear MOLECULE TYPE: protein
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APPLICANT: WALSH, TERENCE A

APPLICANT: WALSH, TERENCE A

APPLICANT: MACSH, ALICE ER

TITLE OF INVENTION: RIBOSOME-INACTIVATING PROTEINS, INACTIVE

TITLE OF INVENTION: PRECURSOR FORMS THEREOF, A PROCESS FOR MAKING A METHOD OF

TITLE OF INVENTION: USING

NUMBER OF SEQUENCES: 81

CORRESPONDENCE ADDRESS:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 121
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                                                                                                                                                                                                                                                                                                                                                                                                                                    99.5%; Score 1024; DB 1; Length 290; 100.0%; Pred. No. 9.4e-112;
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CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/485,286
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PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                             100.0%; Prec. ...
                           UMBER: US/08/378,761A
26-JAN-1995
N. ...
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PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/378761
FILING DATE: 26-JAN-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 27, Application US/08485286
Patent No. 5646026
Patent No. 5646026 5646119
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STREET: 9330 ZIONSVILLE ROAD
CITY: INDIANAPOLIS
                                                                                                                                                 REGISTRATION NUMBER: 33651
REFERENCE/DOCKET NUMBER: 38:
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                              TELEPHONE: (317) 337-4846
INFORMATION FOR SEQ ID NO: 27:
SEQUENCE CHARACTERISTICS:
LENGTH: 290 amino acids
                                                                                                      ATTORNEY/AGENT INFORMATION:
NAME: BORUCKI, ANDREA T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Floppy disk
                    CURRENT APPLICATION DATA:
APPLICATION NUMBER: US,
FILING DATE: 26-JAN-19
CLASSIFICATION: 435
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                                                                                                                                                                                                                                                                                                                     STRANDEDNESS: single TOPOLOGY: linear
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COMPUTER READABLE FORM:
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                                                                                                                                                                                                                                                                                                       amino acid
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                       99.5%; Score 1024; DB 1; Length 290; 100.0%; Pred. No. 9.4e-112; rive 0; Mismatches 0; Indels
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NUMBER OF SEQUENCES: 49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; Parent No. 5248606; Parence A.; HEY, TIMOTHY D.; MORGAN,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
99.5%; Score 1024; DB 6; L
Best Local Similarity 100.0%; Pred. No. 9.4e-112;
Matches 199; Conservative 0; Mismatches 0;
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FILING DATE: 11-JUN-1990
NAME: BORUCKI, ANDREA T
REGISTRATION NUMBER: 33651
REFERENCE/DOCKET NUMBER: 38272B
TELECOMMINICATION INFORMATION:
TELEPHONE: (317) 337-4846
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        182 FQYIEGEMRTRIRYNRRSA 200
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Job time : 12.5641 secs

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1623.314 Million cell updates/sec
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Sequence 9, Al
Sequence 2, Al
Sequence 39,
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                                                                                                                                                                                                      February 10, 2004, 16:26:46; Search time 25.7969 Seconds
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Sequence 3
Sequence 1
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Sequence 1
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'(gnz_6/ptodata/1/pubpaa/USO7_NEW_PUB.ppp:*
'(gnz_6/ptodata/1/pubpaa/USO6_NEW_PUB.ppp:*
'(gnz_6/ptodata/1/pubpaa/USO6_NEW_PUB.ppp:*
'(gnz_6/ptodata/1/pubpaa/USO7_NEW_PUB.ppp:*
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'(gnz_6/ptodata/1/pubpaa/USO8_PUBCOMB.ppp:*
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/ptodata/1/pubpaa/US07_PUBCOMB.pep:*
//hthindata/1/pubpaa/PCT_NEW_PUB.pep:*
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
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US-10-083-336A-5
US-10-127-890-1
US-10-083-336A-1
US-10-083-336A-1
US-10-083-336A-1
US-10-083-336A-7
US-10-083-336A-7
US-10-083-336A-6
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Maximum Match 100%
Listing first 45 summaries
                                                                                                                                     - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                              US-10-083-336A-10
1029
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Maximum DB seq length: 200000000
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Match Length DB
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                                                                                         APPLICANT: Olson, Mark A
APPLICANT: Millard, Charles B
APPLICANT: Millard, Charles B
APPLICANT: Byrne, Michael B
APPLICANT: Byrne, Michael B
APPLICANT: Wannemacher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: P6452US (RILD 01-58)
CURRENT APPLICATION NUMBER: US/10/083,336A
NUMBER OF SEQ ID NOS: 15
SOFTWARE: Patentin Ver: 2.1
SEQ ID NO 10
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                    Sequence 10, Application US/10083336A Publication No. US20030181665A1
                                                                                                                                                                                                                                                                                                                                                                                            TYPE: PRT ORGANISM: Ricinus communis
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                                                                       GENERAL INFORMATION:
US-10-083-336A-10
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Query Match
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APPLICANT: Milard, Charles B
APPLICANT: Byrne, Michael P
APPLICANT: Byrne, Michael P
APPLICANT: Wannemacher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: P67452USO (RIID 01-58)
CURRENT APPLICATION NUMBER: US/10/083,336A
CURRENT FILING DATE: 2002-05-21
NUMBER OF SEQ ID NOS: 15
SOFTWARE: Patentin Ver. 2.1
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COMPUTER READABLE FORM:

COMPUTER: IBM PC compatible

COMPUTER: IBM PC compatible

COMPUTER: DatentIn Release #1.0, Version #1.25

"TOWN DATA: "10/127,890
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ADDRESSEE: MCANdrews, Held & Malloy, Ltd.
STREET: 500 West Madison Street, 34th floor
                                                                                                                                                                                                                                                                            Sequence 5, Application US/10083336A Publication No. US20030181665A1 GENERAL INFORMATION:
, Sequence 1, Application US/10127890 ; Publication No. US20030166196A1
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Matches 199; Conservative
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COUNTRY: USA
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                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Olson, Mark A
                                                                                                                                                                                                                                          US-10-083-336A-5
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Best Local 9
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121 GNYDELEOLAGNIRENIELGNGPLEEAISALYYYSTGGTOLPTLARSFIICIQMISEAAR 180
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APPLICANT: Olson, Mark A
APPLICANT: Millard, Charles B
APPLICANT: Millard, Charles B
APPLICANT: Byrne, Michael P
APPLICANT: Wannemacher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: P67452USO (RIID 01-58)
CURRENT APPLICATION NUMBER: US/10/083,336A
CURRENT FILING DATE: 2002-05-21
NUMBER OF SEQ ID NOS: 15
SOFTWARE: Patentin Ver. 2.1
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100.0%; Pred. No. 3.4e-109;
tive 0; Mismatches 0;
                                                FILING DATE: 13-MAY-1996
FILING DATE: 12-MAY-1996
FILING DATE: 12-MAY-1994
APPLICATION NUMBER: US 08/064,691
                                                                                                                                                                                                                                                                                                                                                   ALTORNEY/AGENT INFORMATION:
NAME: MCMICHOLAB. Janch
REGISTRATION NUMBER: 32, 918
REFERENCE/DOCKET NUMBER: 200-70.P4
                         APPLICATION NUMBER: US/08/646,360
                                                                                                                                                        FILING DATE: 12-MAY-1993
PPLICALION NUMBER: US 07/988,430
FILING DATE: 09-DEC-1992
APPLICATION NUMBER: US 07/901,707
                                                                                                                                                                                                                                                                        FILING DATE: 19-JUN-1992
APPLICATION NUMBER: US 07/787,567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TOPOLOGY: linear
MOLECULE TYPE: protein
SEQUENCE DESCRIPTION: SEQ ID NO: 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 1, Application US/10083336A; Publication No. US20030181665A1; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                               FILING DATE: 04-NOV-1991
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INFORMATION FOR SEQ ID NO: 1:
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PRIOR APPLICATION DATA:
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Matches 199; Conserva
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99.5%; Score 1024; DB 12; Length 576;

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Publication No. US20030143193A1
GENERAL INFORMATION:
APPLICANT: VITETTA,
APPLICANT: GHETIE, VICTOR F.
APPLICANT: BALUNA, JOAN
APPLICANT: BALUNA, SOANA G.
APPLICANT: BALUNA, SOANA G.
APPLICANT: BALUNA, COMPOSITIONS AND METHODS FOR MODIFYING TOXIC EFFECTS OF TITLE OF INVENTION: PROTEINACEOUS COMPOUNDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121 GNYDRIEQLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAAR 180
                                                                                                                                                                                                                            96 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 155
                                                                                                                                                                                                                                                                         122 GNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIIGTQMISEAAR 181
                                                                                                                                                                                                                                                                                                 156 GNYDRLEQLAGNLRENIELCNGPLEEAISALYYYSTGGTOLPTLARSFIICIOMISEAAR 215
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                                                                                       2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 61
                                                                                                                      36 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 95
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APPLICANT: Olson, Mark A
APPLICANT: Milard, Charles B
APPLICANT: Mine Michael P
APPLICANT: Wannewacher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: P67452US0 (RIID 01-58)
CURRENT APPLICATION NUMBER: US/10/083,336A
CURRENT FILING DATE: 2002-05-21
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                                               0; Indels
                       Pred. No. 1e-108;
Best Local Similarity 100.0%; Pred. No. 15-
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Best Local Similarity
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US-10-282-935-1
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APPLICANT: GHETIE, VICTOR F.
APPLICANT: SMALLSHAW, JOAN
APPLICANT: BALUNA, ROXANA G.
TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR AMELIORATING VASCULAR LEAK
TITLE OF INVENTION: SYNDROME (VLS)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          63 SNHAELSVILALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGN 122
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             CURRENT APPLICATION NUMBER: US/10/282,935
CURRENT FILING DATE: 2002-10-29
PRIOR APPLICATION NUMBER: 09/538,873
PRIOR FILING DATE: 2000-03-30
PRIOR FILING DATE: 1999-03-30
PRIOR PILING DATE: 1999-03-30
NUMBER OF SEQ ID NOS: 23
SOFTWARE: PATENTIN Ver: 2.1
SEQ ID NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FILE REFERENCE: UTSD: 603
CURRENT PAPPLICATION NUMBER: US/10/440,796
CURRENT FILING DATE: 2003-05-19
PRIOR APPLICATION NUMBER: US/09/538,873
PRIOR FILING DATE: 2000-03-30
PRIOR PLING DATE: 2000-03-30
PRIOR FILING DATE: 1999-03-30
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; Publication No. US20040009148A1
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Best Local Similarity 100.04
Matches 197; Conservative
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SEQ ID NO 1
LENGTH: 267
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Best Local Similarity 100.
Matches 197; Conservative
FILE REFERENCE: UTSD:884US
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                                                                                                                                                                        SNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGN 122
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                                                                                                                                                                                                                                                                                                                                                13 YDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQ 182
                                                                                                                    64 SNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGN 123
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APPLICANT: Olson, Mark A
APPLICANT: Millard, Charles B
APPLICANT: Byrne, Michael P
APPLICANT: Byrne, Michael P
APPLICANT: Wannemacher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REPERENCE: P67452080 (RIID 01-58)
CURRENT APPLICATION UNDER: US/10/083,336A
CURRENT FILING DATE: 2002-05-21
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APPLICANT: Milard, Charles B
APPLICANT: Michael P
APPLICANT: Mannemacher, Robert W
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Pred. No. 9.1e-108;
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100.0%; Pred. No. ...
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                        183 YIEGEMRTRIRYNRRSA 199
                                                                                                                                                                                                                                                                                                                                                                                                                            184 YIEGEMRTRIRYNRRSA 200
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Matches 196;
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LENGTH: 198
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APPLICANT: Millard, Charles B
APPLICANT: Millard, Charles B
APPLICANT: Millard, Charles B
APPLICANT: Byrne, Michael P
APPLICANT: Wannemedher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: P67452USO (RIID 01-58)
FILE REFERENCE: P67452USO (RIID 01-58)
CURRENT FILING DATE: US/10/083,336A
CURRENT FILING DATE: 2002-05-21
NUMBER OF SEQ ID NOS: 15
SOFTWARE: Patentin Ver. 2.1
                                                                                                                                                                                                                         1 MIFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFIL
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                                                                                                              Length 190;
                                                                                                        Score 960; DB 12;
Pred. No. 4.8e-102;
0; Mismatches 0;
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                                                                                                              Query Match
Best Local Similarity 95.0%;
Matches 190; Conservative
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TYPE: PRT ORGANISM: Ricinus communis
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US-10-083-336A-4
                                                           US-10-083-336A-11
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113 YDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQ 172
                                                                                                                                                                                            Sequence 9, Application US/10083336A; Publication No. US20030181665A1; GENERAL INFORMATION: APPLICANT: Olson, Mark A APPLICANT: Millard, Charles B
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                                               184 YIEGEMRTRIRYNRRS 199
                                                                                          173 YIEGEMRTRIRYNRRS 188
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Matches 144; Conservative
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APPLICANT: Millard, Charles B
APPLICANT: Byrne, Michael P
APPLICANT: Byrne, Michael P
APPLICANT: Wannemacher, Robert W
APPLICANT: Wannemacher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REPREBRUCE: P67452U90 (RIID 01-58)
CURRENT APPLICATION NUMBER: US/10/083,336A
CURRENT FILING DATE: 2002-05-21
                APPLICANT: Olson, Mark A
APPLICANT: Milard, Charles B
APPLICANT: Milard, Charles B
APPLICANT: Milard, Charles B
APPLICANT: Mannemacher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: PF452USO (RIID 01-58)
CURRENT APPLICATION NUMBER: US/10/083,336A
CURRENT FILING DATE: 2002-05-21
NUMBER OF SEQ ID NOS: 15
SOFTWARE: PATENTIN Ver. 2.1
SEQ ID NO 4
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Pred. No. 7.2e-100;
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Best Local Similarity 94.9%;
Matches 186; Conservative (
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Matches 188; Conservative
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       GENERAL INFORMATION:
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US-10-083-336A-8
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Best Local
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           62 ELSNHABLSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 121
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APPLICANT: Millard, Charles B
APPLICANT: Byrne, Michael P
APPLICANT: Wannemacher, Robert W
TITLE OF INVENTION: Rich Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: P67452US0 (RIID 01-58)
CURRENT APPLICATION NUMBER: US/10/083,336A
CURRENT FILING DATE: 2002-05-21
NUMBER OF SEQ ID NOS: 15
SOFTWARE: Patentin Ver. 2.1
APPLICANT: BYTHE, Michael P
APPLICANT: Wannemacher, Robert W
TITLE OF INVENTION: Ricin Vaccine and Methods of Making and Using Thereof
FILE REFERENCE: P67452USO (RILD 01-58)
CURRENT APPLICATION NUMBER: US/10/083,336A
NUMBER OF SEQ ID NOS: 15
SOFTWARE: Patentin Ver. 2.1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
90.8%; Score 934.5; DB 12; Length 185;
Best Local Similarity 93.4%; Pred. No. 3.9e-99;
Matches 185; Conservative 0; Mismatches 0; Indels 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  72.7%; Score 748; DB 12; Length 179; 100.0%; Pred. No. 1e-77; tive 0; Mismatches 0; Indels (
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RESULT 15
305-09-79-793A-39
US-09-79-79-39
Sequence 39, Application US/09792793A
Sequence 39, Application US/09792793A
Sequence 39, Application US/09792793A
Sequence 39, Application US/09792793A
GENERAL INFORMATION:
APPLICANT: McDonald, John R.
APPLICANT: Coggins, Philip
TITLE OF INVENTION: METHODS AND COMPOSITIONS FOR TREATING SECONDARY TISSUE DAWAGE AND FILE REFERENCE: 25020-601D
TITLE OF INVENTION: OTHER INFLAMMATORY CONDITIONS AND DISORDERS
FILE REFERENCE: 25020-601D
CURRENT APPLICATION UNBERS: US/09/792,793A
CURRENT FILING DATE: 2001-02-22
NUMBER OF SEQ ID NOS: 93
SOFTWARE: PATENTIN Ver. 2.0
SEQ ID NO 39
LENGTH: 247
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                                                                                                          62 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG 121
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2 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 61
                                  36 IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILV 95
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33.2%; Score 342; DB 10; Length 247;
Best Local Similarity 39.5%; Pred. No. 8e-31;
Matches 73; Conservative 46; Mismatches 54; Indels 12; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Search completed: February 10, 2004, 16:53:55 Job time : 26.7969 secs
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                                                                                                                                                                                                                                                                156 GNYDRLEQLAGNLRENIELGNGPL 179
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GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
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OM protein - protein search, using sw model

February 10, 2004, 16:17:35; Search time 10.8228 Seconds (without alignments) 1777.145 Million cell updates/sec US-10-083-336A-10 Run on: Title:

1029 1 MIFPKQYPIINFTTAGATVQ......RFQXIEGEMRTRIRYNRRSA 200 Perfect score: Scoring table: Sequence:

283308 segs, 96168682 residues BLOSUM62 Gapop 10.0 , Gapext 0.5 Searched: Total number of hits satisfying chosen parameters:

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

PIR 76:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:* Database :

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

| | Description | ricin D precursor | agglutinin precurs | abrin-d precursor | abrin-c precursor | abrin-b precursor | rRNA N-glycosidase | karasurin - Mongol | karasurin-B - Tric | karasurin C - Tric | abrin (clone 7.2) | abrin-a precursor | Ein | luffin-b - smooth | agglutinin I precu | mistletoe lectin I | rRNA N-glycosidase | rRNA N-glycosidase | rRNA N-glycosidase | rRNA N-glycosidase | | rRNA N-glycosidase | rRNA N-glycosidase | rRNA N-glycosidase | antiviral protein | rRNA N-glycosidase | betavulgin - beet | rRNA N-glycosidase | Ę | tritin - wheat |
|------------|-----------------|-------------------|--------------------|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|-------------------|-------------------|--------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------|--------------------|--------------------|--------------------|-------------------|--------------------|-------------------|--------------------|------|----------------|
| | ID | RLCSD | RLCSAG | S32431 | S16022 | \$32430 | RLTZT | JU0393 | JC5032 | JC5606 | C39761 | TZLSA | 823519 | JN0108 | S62627 | PD0018 | S22494 | S25560 | JC4840 | RLPUGG | JC4235 | JT0753 | 528421 | S17757 | JE0401 | A39817 | | T12573 | RLBH | 833631 |
| | th DB | 76 1 | 564 1 | | | 27 2 | | | 47 2 | | | | | 250 2 | 70 2 | | | | 45 2 | | 86 2 | | 94 2 | | | 78 2 | | 89 2 | 80 1 | 75 2 |
| | Match Length DB | S | 5 | | | Ŋ | 7 | 7 | ~ | 7 | 7 | Ŋ | 7 | 7 | | | 7 | 21 | 2 | | | | | | | | | | | 7 |
| * Query | Match | 99.5 | 90.8 | 34.4 | 4 | 33.5 | m. | 2 | 32.8 | 32.8 | 32.7 | ς. | 29.9 | ο. | | 7. | 27.6 | 27.1 | 27.0 | 26.9 | 26.4 | | 19.2 | • | | 17.3 | | 14.5 | • | 13.3 |
| | Score | 1024 | 934.5 | 3 | 3 | 345 | 342 | 338 | 338 | 338 | 336.5 | 329.5 | 307.5 | 300.5 | 291 | 286 | 284.5 | 279 | 278 | 277 | 272 | 245.5 | 197.5 | 182 | | 178 | in | 149.5 | 140 | 137 |
| Result | No. | | 7 | 3 | 4 | 5 | 9 | 7 | 80 | o, | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |

| 30K ribosome inact | protein synthesis | rRNA N-glycosidase | rRNA N-glycosidase | rRNA N-glycosidase | ribosome-inactivat | rRNA N-glycosidase | rRNA N-glycosidase | rRNA N-glycosidase | rRNA N-glycosidase | rRNA N-glycosidase | shiga-like toxin I | Shiga toxin 2 subu | Shiga toxin 2 subu | Shiga-like toxin I | rRNA N-glycosidase |
|--------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| B38664 | JC5848 | S28542 | S28539 | S29931 | S46239 | 805205 | 817519 | \$28541 | RLQHG2 | A58923 | I54695 | E90779 | G85640 | 801032 | S17932 |
| ~ | N | 7 | N | 7 | 7 | 0 | ~ | 7 | Н | 7 | Ŋ | N | ~ | 7 | 7 |
| 281 | 280 | 253 | 253 | 253 | 310 | 283 | 293 | 253 | 292 | 253 | 319 | 319 | 319 | 318 | 236 |
| 12.9 | 12.8 | 12.7 | 12.3 | 12.3 | 12.2 | 12.1 | 12.0 | 12.0 | 11.8 | 11.2 | 10.8 | 10.8 | 10.8 | 10.7 | 10.7 |
| 133 | 132 | 131 | 127 | 127 | 126 | 124 | 123.5 | 123 | 121 | 115 | 111 | 111 | 111 | 110.5 | 110 |
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ALIGNMENTS

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precursor - castor bean

Nicontains: rRNA N-glycosidase (EC 3.2.2.2)

Cispecies: Ricinus communis (castor bean)

Cispecies: Ricinus communis (castor bean)

Cispecies: Ricinus communis (castor bean)

Cispecies: Allored Sales and Castor Bean)

Cispecies: Allored Sales and Castor Bean

Ritalling K.C.; Halling A.C.; Murray, E.E.; Ladin, B.F.; Houston, L.L.; Weaver, R.F.

Nucleic Acids Res. 13, 8019-8013, 1985

Altitle: Genomic cloning and characterization of a ricin gene from Ricinus communis.

A.Reference number: A24041; MUID:86067214; PMID:2999712

A/Accession: A24041
A/Molecule type: DNA
A/Residues: 1-576 cHAL>
A/Rossidues: 1-576 cHAL>
A/Cossidues: 1-576 cHAL>
A/Cossidues: 1-576 cHAL>
A/Cossidues: 1-576 cHAL>
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A/Cossidues: 1-576 cHAL>
B/Cossidues: 1-576 cHAL>
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A/Cossidues: 1-576 cHAL>
A/Cossidues: 1-576 cHRE>
A/Cossidues: 1-576 cHRE>
A/Residues: 1-576 cHRE>

A; Cross-references: EMBL:X52908; NID:g21084; PIDN:CAA37095.1; PID:g21085 R; Lamb, F.I.; Roberts, L.M.; Lord, J.M.
R; Lamb, F.I.; Roberts, L.M.; Lord, J.M.
Biochem. 148, 265-270, 1985
A; Title: Nucleotide sequence of cloned cDNA coding for preproricin.
A; Reference number: A24614; MUID:85179479; PMID:3838723

A; Accession: A24614

A; Molecule type: mRNA
A, Residues: 12-75, 'D, 77-550,'R',552-576 <LAM>
A, Residues: 12-75,'D, 77-550,'R',552-576 <LAM>
A, Cross-references: GB: XX02388; NID: g21077; PIDN: CAA26230.1; PID: g21078
R; Yoshitake, S.; Funatsu, G.; Funatsu, M.
Agric. Biol. Chem. 42, 1267-1274, 1978
A; Fitle: Isolation and sequences of peptic peptides, and the complete sequence of Ile challed elements and sequence of Ile challed and sequences of peptic peptides.

A; Accession: A03372

A; Molecule type: protein
A; Residues: 36-97, 'Q', '99-109, 'S', 111-269, 'D', 272-283, 'L', 285-288, 290-302 <XOS>
A; Note: this paper cites the others in the series providing experimental details for the B; Araxi, T.; Funatsu, G
FEBS Lett. 191, 121-124, 1985
A; Title: Revised amino acid sequence of the B-chain of ricin D due to loss of tryptophan
A; Reference number: A24010

A; Accession: A24010

A; Molecule type: protein A; Residues: 315-383, 'PS', 386-576 <ARA>

R;Funatsu, G.; Kimura, M.; Funatsu, M. Agric. Biol. Chem. 43, 2221-2224, 1979 A;Title: Primary structure of Ala chain of ricin D.

A; Reference number: A03374

A; Molecule type: protein A; Accession: A03374

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C;Comment: Abrin consists of an A chain, which inhibits protein synthesis by inactivatin The A and B chains are linked by a single disulfide bond, which is essential for toxici C;Superfamily: ricin; RRM N-glycosidase homology C;Keywords: disulfide bond; duplication; glycoprotein; glycosidase; hydrolase; lectin; p F;1-251/Product: abrin-d chain A #status predicted <ACH>F;7-246/Domain: RRNA N-glycosidase homology <RNG>F;7-246/Domain: RRNA N-glycosidase homology <RNG>F;7-246/Domain: abrin-d chain B #status predicted <BCH>
                                                                                                                                                                                                                                                                                                                                                                                                                                                             C. Superfamily: ricin; rRNA N-glycosidase homology
C. Keywords: duplication; glycoprotein; glycosidase; hydrolase; lectin; RNA binding; seed
C. Keywords: duplication; glycoprotein; glycosidase; hydrolase; lectin; RNA binding; seed
C. Keywords: duplication; glycoprotein; glycosidase; hydrolase; lectin; RNA binding; seed
F. 12-290/Product: agglutinin chain A #status predicted «ACH»
F. 30-284/Product: agglutinin chain B #status experimental «BCH»
F. 30-284/Product: agglutinin chain B #status experimental «BCH»
F. 30-284/Product: agglutinin chain B #status experimental «BCH»
F. 30-284/Product: agglutinin chain B #status experimental «BCH»
F. 30-284/Product: agglutinin chain B #status predicted
F. 36-402,405-443,450-465,489-528,531-564/Region: 40-residue repeats
F. 319-361,362-402,405-443,480-465,489-528,531-564/Region: 40-residue repeats
F. 30-361,362-402,405-443,480-465,489-509/Disulfide bonds: #status predicted
F. 200, 203/Active site: Glu, Arg #status predicted
F. 200, 203/Active site: N-acetylgalactosamine (Asp, Asn) #status predicted
F. 397,437/Binding site: N-acetylgalactosamine (Asp, Asn) #status predicted
                                                                                                                                                                                                                                                                                           A,Molecule type: protein
A,Residues: 303-325,'F',327-330,'T',332-361,'D',363-373,'G',375-403,'T',405-551,'V',553-
C,Comment: This protein has strong agglutinating activity and weak cytotoxicity compared
                                                                        Biochim. Biophys. Acta 872, 277-285, 1986
A; Title: The complete amino acid sequence of the B-chain of the Ricinus communis aggluti
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
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C;Species: Abrus precatorius (Indian licorice)
C;Date: 30-Sep-1993 #sequence_revision 01-Aug-1997 #text_change 01-Aug-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   62 ELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         - Indian licorice (fragment)
                        T.; Yoshioka, Y.; Funatsu, G.
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A;Accession: S34408
                                                                                                                                                                                          A; Reference number: A24210
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A;Residues: 1-528 <HUN>
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A) Reference number: A8238 MUID:9132005; PMID:1881882

A) Title: Structure of ricin B-chain at 2.5 angstrom resolution.

A) Reference number: A8239 MUID:91322005; PMID:1881882

A) Title: Structure of ricin A-chain at 2.5 angstroms.

B) Reference number: A48239; MUID:91352004; PMID:1881881

A) Title: Structure of ricin A-chain at 2.5 angstroms.

A) Reference number: A48239; MUID:91352004; PMID:1881881

A) Title: Structure of ricin A-chain at 2.5 angstroms.

A) Conment: The functional molecule is a disulfide-linked dimer of A and B chains, which C; Comment: The A chain inhibits protein synthesis; it inactivates the 60S ribosomal subtoon to call of the A chain; B chains are also responsible for cell agglutination (lecting the call of the A chain; B chains are also responsible for cell agglutination (lecting C; Comment: This protein is cytotoxic and very poisonous to animals.

C; Comment: This protein is cytotoxic and very poisonous to animals.

C; Superfamily: ricin; rRNA N-glycosidase homology cides (5105)

C; Keywords: duplication; glycoprotein; glycosidase; hydrolase; lectin; RNA binding; seed F; 1-35/Domain: rRNA N-glycosidase homology cRNG>
F; 46-293/Domain: rRNA N-glycosidase homology cRNG>
F; 46-293/Domain: rRNA N-glycosidase homology cRNG>
F; 46-293/Domain: rRNA N-glycosidase homology cRNG>
F; 41-35/Forduct: ricin D chain B Hastaus experimental cBCH>
F; 41-414, 417-455, 462-497, 501-540, 543-55/Region: 40-49/Binding site: carbohydrate (Asn) (covalent) #status experimental
F; 45, 409, 449/Binding site: carbohydrate (Asn) (covalent) #status predicted
F; 71-70/Nortive sites.
F; 11-15 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F, 11-10 F
A;Residues: 315-335, N',337-342,'NH',345-362,364-383,'PS',386-399,'T',401,'D',403,'E',40 527,'E',529-564,'W',566,'H',567-570,'LI',573-574,'F' <FUNS Abote: Lhis paper, one of a series, summarizes the experimental details for the determing R;Ready, M.P.; Kim, Y.; Robertus, J.D.

Proteins 10, 270-278, 1991

Proteins 10, 270-278, 1991

A;Title: Site-directed mutagenesis of ricin A-chain and implications for the mechanism of A;Reference number: A48237; MUID:91352006; PMID:1881883

A;Contents: annotation; active site
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F;294-318,334-353,377-394,465-478,504-521/Disulfide bonds: #status experimental
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100.0%; Pred. No. 2.1e-84;
iive 0; Mismatches 0; Indels
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July precursor - Indian licorice (fragment)

N; Contains: RRN N-Gyycosidase (EC 3.2.2.2)
C; Species: Abrus precatorius (Indian licorice)
C; Species: Abrus precatorius (Indian licorice)
C; Species: Abrus precatorius (Indian licorice)
C; Accession: S32430; JC1399
C; Accession: S32430; JC1399
R; Hung C. H.; Lee, M. C.; Lee, T. C.; Lin, J. Y.
J. Mol. Biol. 229, 263-267, 1993
A; Ritle: Primary structure of three distinct isoabrins determined by cDNA sequencing. Cor A; Reference number: S32429; MUID:93132798; PMID:8421313
A; Accession: S32429; MUID:93132798; PMID:8421313
A; Accession: S32429; MUID:93166296; PIDN:AAA32625.1; PID:9166297
R; Kimura, M.; Sunizawa, T.; Funatsu, G.
R; Kimura, M.; Sunizawa, T.; Funatsu, G.
Biosci. Biotechnol. Biochem. 57, 166-169, 1993
A; Title: The complete amino acid sequences of the B-chains of Abrin-a and Abrin-b, toxic A; Reference number: JC1398; MUID:93169023; PMID:7763422
A; Accession: JC1398
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A, Residues: 260-281, 'D', 283-290, 'N', 292-349, 'PQ', 352-377, 'N', 379-425, 'M', 427, 'D', 429-430,
A, Residues: 260-281, 'D', 283-290, 'N', 292-349, 'PQ', 352-377, 'N', 379-425, 'M', 427, 'D', 429-430,
A, Resperimental source: seed
A, Respective to the seed of the
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                                                 126 RLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYI 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      59 SDTESIEAGIDVSNAYVVAYRAGNRSYFL---RDAPTSASRYLFTGTQ-QYSLRFNGSYI 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 6 QYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILVELSN 65
                                                                                             149 DLERWAHQTREEISLGLQALTHAIS---FLRSGASNDEEKARTLIVIIQMASEAARYRYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 ODQVIKFTTEGATSOSYKOFIEALRORLTGG--LIHGIPVLPDPTTLQERNRYISVELSN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NiAlternate names: alpha TCS; type I ribosome-inactivating protein C; Species: Trichosanthes kirilowii (Mongolian snake-gourd)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 2; Length 527;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 33.,
Pred. No. 3e-23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        33.5%; Score 345; DB
45.5%; Pred. No. 3e-2
tive 22; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 87; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     186 EGEMRTRIRYN 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     171 SYRVGVSİRTN 181
                                                                                                                                                                                                                 186 EGEMRTRIR 194
                                                                                                                                                                                                                                                                                                      206 SNRVGVSIR 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
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Eur. J. Biochem. 198, 723-732, 1991
A;Title: Preproabrin: genomic cloning, characterisation and the expression of the A-chai
A;Reference number: S16022; MUID:91266957; PMID:2050149
A;Accession: S16022
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A; Cross-references: EMBL:X55667; NID:g16084; PIDN:CAA39202.1; PID:g16085
A; Cross-references: EMBL:X55667; NID:g16084; PIDN:CAA39202.1; PID:g16085
C; Comment: Abrin consists of an a chain, which inhibits protein synthesis by inactivating the A and B chains are linked by a single disulfide bond, which is essential for toxicity c; Superfamily: ricin; rRNA N-glycosidase homology
C; Superfamily: ricin; glycosidase homology
F; S52-285, Product: abrin-c chain A #status predicted <ACH>
F; 21-280, Domain: rRNA N-glycosidase homology <RNG>
F; 252-585, Product: abrin-c chain B #status predicted <ACH>
F; 317-359, 360-400, 403-441, 448-483, 487-526, 529-527, Region: 40-residue repeats
F; 35, Modified site: pyrrolidone carboxylic acid (Gln) (in mature form) #status predicted
F; 108, 147, 229, 230, Binding site: substrate (Tyr, Tyr, Glu, Asn) #status predicted
F;283-325,326-366,369-407,414-449,453-495,495-528/Region: 40-residue repeats
F;1/Modified site: pyrrolidone carboxylic acid (Gln) #status predicted
F;74,113,195,196/Binding site: substrate (Tyr, Tyr, Glu, Asn) #status predicted
F;164,167/Active site: Glu, Arg #status predicted
F;200,253,361,401,402/Binding site: carbohydrate (Asn) (covalent) #status predicted
F;280,253,361,401,402/Binding site: carbohydrate (Asn) (pyrded)
F;280,1253,361,401,402/Binding site: N-acetyjgalactosamine (Asp, Asn) #status predicted
F;280,521/Binding site: N-acetyjgalactosamine (Asp, Asn) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ;234,287,395,435,436/Binding site: carbohydrate (Asn) (covalent) #status predicted;281-303,320-339,363-380,451-464,490-507/Disulfide bonds: #status predicted;322,346/Binding site: N-acetylgalactosamine (Asp, Asn) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     66 HAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDABAITHLFTDVQNRYTFAFGGNYD 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYD 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SERESIEVGIDVTNAYVVAYRAGSQSYFL---RDAPASASTYLFFGTQ-RYSLRFDGSYG 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYI 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6 QYPIINFTTAGATVQSYTNFIRAVRGRLFTGADVRHEIPVLPNRVGLPINQRFILVELSN 65
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    N;Contains: rRNA N-glycosidase (EC 3.2.2.22)
C;Species: Abrus precatorius (Indian licorice)
C;Date: 19-Mar-1997 #sequence_revision 19-Mar-1997 #text_change 20-Aug-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            F;534,555/Binding site: N-acetylgalactosamine (Asp, Asn) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                6 QYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILVELSN
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                                                                                                                                                                                                                                                                                                                                                                                  Score 353.5; DB 2; Length 528; Pred. No. 5.1e-24;
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                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local S
Matches 86
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C;Accession: JC5032
R;Kondo, T.; Mizukami, H.; Takeda, T.; Ogihara, Y.
Ricondo, T.; Mizukami, H.; Takeda, T.; Ogihara, Y.
Biol. Pharm. Bull. 19, 1485-1489, 1996
A;Title: Amino acid sequences and ribosome-inactivating activities of karasurin-B and ka A;Reference number: JC5032; MUID:97108848; PMID:8951169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A,Title: The complete amino acid sequence of an abortifacient protein, karasurin. A,Reference number: JU0393; MUID:92005921; PMID:1914000
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  129 QLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIOMISEAARFQYIEGE 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        70 SVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDA-EAITHLFTDVQNRYTFAFGGNYDRLE 128
                                                                                                                                                                                                                                                                                                                                                                                       70 SVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDA-EAITHLFTDVQNRYTFAFGGNYDRLE 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            129 QLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIOMISEAARFQYIEGE 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             10 INFITAGATVOSYTNFIRAVRGRLTTGADVRHBIPVLPNRVGLPINQRFILVELSNHAEL 69
                                                                                                                                   10 INFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILVELSNHAEL 69
                                                                                                                                                                                    S SFRISGATSSSYGVFISNIRKALPNERKL-YDIPLL--RSSLPGSQRYALIHLINYADE 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  karasurin-B - Trichosanthes kirilowii var. japonica
C;Species: Trichosanthes kirilowii var. japonica
C;Date: 27-Feb-1997 #sequence_revision 27-Feb-1997 #text_change 23-May-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    C.Species: Trichosanthes kirilowii (Mongolian snake-gourd)
C.Date: 30-Sep-1991 #sequence_revision 30-Sep-1991 #text_change 12-Apr-1995
C.Accession: JU0393; PS0163
C.Accession: JU0393; PS0163
C.Accession: JU0393; PS0163
Chem. Pharm. Bull 39, 1244-1249, 1991
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                                           12; Gaps
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                                           54; Indels
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    39.5%; Pred. No. 2.6e-23;
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                                       46; Mismatches
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                                                     73; Conservative
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A;Status: preliminary
A;Molecule type: protein
A;Residues: 1-247 <KON>
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    Best Local Similarity
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                                                          Matches
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Nat. Struct. Biol. 1, 695-700, 1994

A;Title: Crystal structure of trichosanthin-NADPH complex at 1.7 Angstroms resolution re
A;Reference number: A58622; MUID:95360714; PMID:7634073
A;Contents: annotation; X-ray crystallography, 1.7 angstroms
C;Comment: Alpha-trichosanthin has been used to induce abortions.
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C,Function: hydrolyzes the N-glycosidic bond of a specific adenosine in 28S rRNA ther

C,Superfamily: rRNA N-glycosidase; rRNA N-glycosidase homology

C,Keywords: abortifacient; glycosidase, hydrolase; root; toxin

F;1-3J/Domain: signal sequence #status predicted <SIG>

F;24-270/Product: trichosanthin alpha #status experimental <MAT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A Molecule type: DNA

A. Residues: 1-72, VV, 74-90, S, 92-233, TV, 235-267, DV, 269-289 <ZHE>

A. Cross-references: GB:S70176; NID:g547148; PIDN:AAB31048.1; PID:g547149

A. Cross-references: GB:S70176; NID:g547148; PIDN:AAB31048.1; PID:g547149

B. Collins, E.J.; Robertus, J.D.; LoPresti, M.; Stone, K.L.; Williams, K.R.; Wu, P.; Hwan

J. Biol. Chem. 265, 8665-8669, 1990

A. Fitle: Primary amino acid sequence of alpha-trichosanthin and molecular models for abz

A. Reference number: A36273; MUID:90256789; PMID:2341399
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A, Molecule type: protein
A, Residues: 24-270 <COID.
R, Wang, Y., Qian, R.O.; Gu, Z.W.; Jin, S.W.; Zhang, L.Q.; Xia, Z.X.; Tian, G.Y.; Ni, C.Z
R, Wang, T.Y.; Qian, R.O.; Gu, Z.W.; J986
A, Title: Scientific evaluation of Tian Hua Fen (THF): history, chemistry and application
A, Reference number: J70003
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A; Residues: 24-56, 'L', 58-59, 'I', 61-71, 'I', 73-81, 85-86, 'L', 88-92, 'DAGLPRNAVL', 93-142, 'GL'
A; Residues: 24-56, 'L', 58-59, 'I', 61-71, 'I', 73-81, 85-86, 'L', 88-92, 'DAGLPRNAVL', 93-142, 'GL'
B; Experimental source: tuber
B; Huang, Q:, Liu, S:, Tang, Y:, Jin, S:, Wang, Y.
A; Reference number: A67091; PDB: LMRJ
A; Contents: annotation; X-ray crystallography, 1.6 angstroms, with adenine, residues 24-8; Huang, Q:, Liu, S:, Tang, Y:, Jin, S:, Wangy Y:
Submitted to the Brookhaven Protein Data Bank, July 1994
A; Reference number: A67092; PDB: LMRS
A; Reference number: A67092; PDB: LMRS
A; Reference number: A67092; PDB: LMRS
A; Reference number: A67092; PDB: LMRS
A; Reference number: A67092; PDB: LMRS
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A; Reference number: A67092; PDB: LMRS
A; Reference number: A67092; PDB: LMRS
A; Reference numb
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R;Chow, T.P.; Feldman, R.A.; Lovett, M.; Piatak, M.
Sichow, T.P.; Feldman, R.A.; Lovett, M.; Piatak, M.
Biol. Chem. 265, 8670-8674, 1990
A;Title: Chem. 265, 8670-8674, 1990
A;Title: Alalation and DNA sequence of a gene encoding alpha-trichosanthin, a type I rik
A;Reference number: A36274; MUID:90256790; PMID:2341400
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C;Date: 30-Sep-1988 #sequence revision 26-Jan-1996 #text_change 23-Mar-2001 C;Accession: JT0566; A36274; JC1093; A36273; JT0003 R;Shaw, P.C.; Yung, M.H.; Zhu, R.H.; Ho, W.K.K.; Ng, T.B.; Yeung, H.W. Gene 97, 267-272, 1991 A;Pitle: Cloning of trichosanthin cDNA and its expression in Escherichia coli. A;Reference number: JT0566; MUID:91153657; PMID:1999291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Residues: 1-233, T', 235-246, M', 248-289 <CHO>A;Ccoss-references: GB:J05434; NID:g170534; PIDN:AAA34206.1; PID:g170535
R;Zheng, H.G.; Wang, B.; Shao, P.Z.; Yang, X.R.
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F;727-266/Domain: rRNA N-glycosidase homology <RNG>
F;271-289/Domain: carboxyl-terminal propeptide #status predicted <CTP>
F;231-289/Domain: gride: Tyr, Glu, Arg #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        R;Zheng, H.G.; Wang, B.; Shao, P.Z.; Yang, X.R. Acta Genet. Sin. 21, 42-51, 1994 Acta Genet. Sin. 21, 42-51, 1994 A;Title: Cloning and DNA sequencing of the gene encoding Trichosanthin. A;Reference number: JC1093; MJID:94271613; PMID:8003348
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                                                                                                                                                                                                                                                                                                                                                A; Molecule type: mRNA
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33.2%; Score 342; DB 1; Length 289;

Query Match

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83; Conservative
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194 IGKRV 198
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A:Molecule type: protein
A;Molecule type: protein
A;Molecule type: protein
A;Molecule type: protein
C;Comment: This protein is a ribosome-inactivating protein and exhibit cytotoxic, aborti
C;Comment: This protein belongs to type I ribosomal-inactivating proteins which catalyti
C;Superfamily: rRNA N-glycosidase; rRNA N-glycosidase homology
E;22-270/Product: karasurin C #status predicted <MAA>
E;22-270/Product: karasurin A #status predicted <MAA>
E;24-270/Product: RNNA N-glycosidase homology <RNG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C; Species: Trichosanthes kirilowii var. japonica
C; Species: Trichosanthes kirilowii var. japonica
C; Date: 23-Sep-1997 #sequence_revision 23-Sep-1997 #text_change 19-Jul-2002
C; Accession: JC5606, JC5033
R; Mizukami, H.; Iida, K.; Kondo, T.; Ogihara, Y.
Biol. Pharm. Bull. 20, 711-713, 1997
A; Mitle: Cloning and bacterial expression of a gene encoding ribosome-inactivating prote
A; Reference number: JC5606, MuID:97356562; PMID:9212998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A)Cross-references: DDBJ:AB000666, NID:g2329830; PIDN:BAA21786.1; PID:g2329831
R;Kondo, T.; Mizukami, H.; Takeda, T.; Ogihara, Y.
Biol. Pharm. Bull. 19, 1485-1489, 1996
A;Title: Amino acid sequences and ribosome-inactivating activities of karasurin-B and ka A;Reference number: UC5032; MUID:97108848; PMID:9951169
C;Comment: This protein belongs to type I ribosomal-inactivating proteins which catalyti
C;Superfamily: rRNA N-glycosidase; rRNA N-glycosidase homology
F;4-243/Domain: rRNA N-glycosidase homology <RNG>
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      82 TISVAIDVTNVYVMGYRAGDISYFF---NEASAIEAAKYVFKDAKRKVTLPYSGNYERLQ 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           129 QLAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGE 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10 INFTTAGATVQSYTNEIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILVELSNHAEL 69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    81
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                                                                                                                                                                                                                                                                                                                                                                                                                                           SVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDA-EAITHLFTDVQNRYTFAFGGNYDRLE 128
                                                                                                                                                                                                                                                                                                                                         59 IISVAIDVINVYVMGYRAGDISYFF---NEASAIEAAKYVFKDAKRKVILPYSGNYERLQ 115
                                                                                                                                                                                                       10 INFITAGATVQSYINFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILVELSNHAEL 69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 25 VSFRLSGATSSSYGVFISNLRKALPYERKL.YDIPLL--RSTLPGSQRYALIHLTNYADE
                                                                                                                                                                                                                                       2 VSFRLSGAISSSYGVFISNLRKALPYERKL-YDIPLL--RSTLPGSQRYALIHLINYADE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                          Gaps
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                                                                                                                                                            12;
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                                                                                                       Length 247;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    53; Indels
                                                                                                                                                          53; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               32.8%; Score 338; DB 2;
40.0%; Pred. No. 5.9e-23;
tive 46; Mismatches 53;
                                                                                                  32.8%; Score 338; DB 2;
40.0%; Pred. No. 4.8e-23;
Live 46; Mismatches 53.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  karasurin C - Trichosanthes kirilowii var. japonica
                                                                                                    Query Match
Best Local Similarity 40.0%
Marches 74, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Best Local Similarity
Matches 74; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     189 MRTRI 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Residues: 1-289 <MIZ>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          171 IGKRV 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           189 MRTRI 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Accession: JC5033
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                      20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 9
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abrin-a precursor - Indian licorice (fragment)
N;Contains: rRNA N-glycosidase (EC 3.2.2.22)
C;Species: Abrus precarcrius (Indian licorice)
C;Species: Abrus precarcrius (Indian licorice)
C;Accession: S32429; J70202; A39761; J71398; S14472; S24I33; S74110; S74111
R;Hung, C.H.; Lee, M.C.; Lee, T.C.; Lin, J.Y.
J. Mol. Biol. 229, 263-267, 1993
A;Title: Primary structure of three distinct isoabrins determined by cDNA sequencing. Cor A;Reference number: S32429; MUID:93132798; PMID:8421313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A, Molecule type: DNA
A, Residues: 1-251 < EVE>
A, Molecule type: DNA
A, Residues: 1-251 < EVE>
R, Fevensen, G.; Mathiesen, A.; Sundan, A.
R, Festidues: 1-251 < EVE>
R, Fevensen, G.; Mathiesen, A.; Sundan, A.
R, Ferensen, G.; Mathiesen, A.; Sundan, A.
S, Rescription: Direct molecular cloning of two distinct abrin A-chains.
A, Reference number: S14471
A, Reference number: S14471
A, Residues: 'M', 1-251 < EVE>
A, Cross-references: EMBL: X54872; NID: 916088; PIDN: CAA38654.1; PID: 916089
C, Superfamily: ricin; rRNA N-91ycosidase homology
C, Superfamily: ricin; rRNA N-91ycosidase; hydrolase; lectin; toxin
F; 7-251/Product: abrin (clone 7.2) chain A #etatus predicted < ACH>
F; 7-246/Domain: rRNA N-91ycosidase homology < RNG>
F; 74,113,195,196/Binding site: substrate (Tyr, Tyr, Glu, Asn) #status predicted
F; 164,167/Active site: Glu, Arg #status predicted
abril (clone 7.2) precursor - Indian licorice (fragment)
N;Contains: rRNA N-glycosidase (EC 3.2.2.2)
N;Contains: rRNA N-glycosidase (EC 3.2.2.2.2)
C;Species: Abrus precatorius (Indian licorice)
C;Species: Abrus precatorius (Indian licorice)
C;Accession: C39761; 814471
R;Evensen, G.; Mathiesen, A.; Sundan, A.
B;Evensen, G.; Mathiesen, A.; Sundan, A.
A;Fitle: Direct molecular cloning and expression of two distinct abrin A-chains.
A;Reference number: A39761; MUID:91201329; PMID:2016300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       63 SIEVGIDVTNATVVAYRAGSQSYFL---RDAPASASTYLFTGTQ-RYSLRFDGSYGDLER 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      130 LAGNLRENIELGNGPLEEAISALXYXSTGGTQLPTLARSFIICIOMISEAARFQYIEGEM 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            119 WAHQTREQISLGLQALTHAIS---FLRSGASNDEEKARTLIVIIQMASEAARYRYISNRV 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Residues: 'E'.2-528 <hUN>
A;Cross-references: GB:M98344; NID:gl66294; PIDN:AAA32624.1; PID:gl66295
A;Cross-references: GB:M98344; NID:gl66294; PIDN:AAA32624.1; PID:gl66295
A;Note: the coding region for the sequence shown is preceded by an ATG codon A;Note: residues 1-8 were derived from the synthesized primer
A;Note: residues 1-8 were derived from the synthesized primer
A;Frunatsu, G.; Taguchi, Y.; Kamenosono, M.; Yanaka, M.
Agric. Biol. Chem. 52, 1095-1097, 1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 10 INFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILVELSNHAEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .Match 32.7%; Score 336.5; DB 2; Length 251; Local Similarity 44.9%; Pred. No. 6.7e-23;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     24; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Status: nucleic acid sequence not shown
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62

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R;Kataoka, J.; Habuka, N.; Miyano, M.; Masuta, C.; Koiwai, A. Biol. 19, 887-789, 1992
A;Title: Nucleotide sequence of cDNA encoding beta-luffin, another ribosome-inactivating A;Reference number: S23519; MUID:92353400; PMID:1643290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Title: Complete amino acid sequence of luffin-b, a ribosome-inactivating protein from A;Reference number: JN0108; MUID:91248488; PMID:1368666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            130 LAGNIRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMISEAARFQYIEGEM 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       70 SVTLALDVINAYVVGYRAGNSAYFFHPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQ 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              24 VSFSLSGADSKSYSKFITALRKALPSKEKVSNIPLLLPSASGA---SRYILMQLSNYDAK 80
                                                                                                                                                                                                                                                 128 EQLAGNLRENIELGNGPLEEALSALYYYSTGGTQLPTLARSFIICIQMISBAARFQYIEG 187
                                                                                                                                                                                                                                                                                      10 INFTIAGATVOSYTNFIRAVRGRLTIGADVRHEIPVLPNRVGLPINQRFILVELSNHAEL 69
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C;Date: 04-Sep-1998 #sequence_revision 04-Sep-1998 #text_change 07-May-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 C;Species: Luffa cylindrica (smooth loofah)
C;Date: 17-Apr-1993 #sequence_revision 17-Apr-1993 #text_change 20-Aug-1999
C;Accession: S23519; S23113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10 INFITAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVGLPINQRFILVELSNHAEL
                                       70 SVTLALDVTNAYVVGYRAGNSAYFFH--PDNQEDAEALTHLFTDVQNRYTFAFGGNYDRL
                                                                                                                                                                               63 SIEVGIDVTNAXVVARRAĞIQSYFLRDAÞSSASD----YLFTGI-DQHSLPFYGTYGDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Residues: 1-278 «KAT>
A;Cross-references: EMBL:X62372; NID:g19149; PIDN:CAA44230.1; PID:g19150
A;Cross-references: EMBL:X62372; NID:g191949; PIDN:CAA44230.1; PID:g19150
C;Superfamily: rRNA N-glycosidase; rRNA N-glycosidase homology «RNG»
F;26-264/Domain: rRNA N-glycosidase homology «RNG»
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F;5-246/Domain: rRNA N-glycosidase homology <RNG>
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; Score 307.5; DB 2; Pred. No. 3.2e-20; 45; Mismatches 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              29.2%; Score 300.5;
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R;Islam, M.R.; Hirayama, H.; Funatsu,
Agric, Biol. Chem. 55, 229-238, 1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             29.9%;
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Matches 67; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    beta-luffin - smooth loofah
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             190 RTRIRYN 196
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A, Residues: 1-250 <ISL>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JN0108
luffin-b - smooth loofah
                                                                                                                                                                                                                                                                                                                                                                                                188 EMRTRIR 194
                                                                                                                                                                                                                                                                                                                                                                                                                                                           174 RVRVSIQ 180
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: mRNA
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C;Superfamil
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 12
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C;Comment: Abrin-a is more toxic than ricin. The toxin consists of an A chain, which intending receptors on the cell surface. The A and B chains are linked by a single disulfit caining receptors on the cell surface. The A and B chains are linked by a single disulfit c;Superfamily: ricin; FirAN N-91ycosidase homology. C;Reywords: duplication; glycosidase; hydrolase; lectin; pyroglutamic acid F;1-251/Product: abrin-a chain A #status experimental cACH>
F;7-246/Domain: FNRA N-91ycosidase homology cRNG>
F;241-521/Product: abrin-a chain B #status experimental cACH>
F;281-325,326-366,369-407,414-449,453-492,495-528/Region: 40-residue repeats
F;281-325,326-366,369-407,414-449,453-492,495-528/Region: 40-residue repeats
F;144,167/Active site: pyrrolidone carboxylic acid (Gln) #status experimental
F;247-259,286-305,329-346,417-430,456-437/Disulfide bonds: #status predicted
F;280,312/Binding site: carbohydrate (Asp), Asn) #status predicted
F;361,401/Binding site: carbohydrate (Asp), Asn) #status predicted
F;500,521/Binding site: N-acetylgalactosamine (Asp, Asn) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                   A; Molecule type: DNA
A; Residues: 'E',2-251 <EVE>
A; Cross-references: GBX54807.2
A; Cross-references: GBX54807.2
A; Note: residues 1-8 were derived from the synthesized primer
B; Kimura, M.; Sumizawa, T.; Funatsu, G.
B; Kimura, M.; Sumizawa, T.; Funatsu, G.
A; 16-169, 1993
A; Title: The complete amino acid sequences of the B-chains of Abrin-a and Abrin-b, toxid
A; Reference number: JC1398; MUID:93169023; PMID:7763422
                                                                                                                                 A; Molecule type: protein
A; Molecule type: protein
A; Molecule type: protein
A; Residue forms pyrrolidone carboxylic acid; therefore, we have
A; Note: the amino-terminal residue forms pyrrolidone carboxylic acid; therefore, we have
R; Evensen, G.; Mathiesen, A.; Sundan, A.
A; Evensen, G.; Mathiesen, A.; Sundan, A.
A; Title: Direct molecular cloning and expression of two distinct abrin A-chains.
A; Reference number: A39761; MUID:91201329; PMID:2016300
         A, Title: The complete amino acid sequence of the A-chain of abrin-a, a toxic protein A, Reference number: JT0202
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A; Molecule type: protein
A; Molecule type: protein
A; Experimental source: seed
A; Experimental source: seed
B; Experimental source: seed
A; Experimental source: seed
A; Experimental source: seed
B; Experimental source: seed
A; Experimental source: seed
B; Experimental source: Seed
B; Experimental source: Seed
A; Reference number: S14471
A; Reference number: S14472
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A;Residues: 262-297, Y', 299-426, 'L', 428-466, 'P', 468-482, 'L', 484-528 <CI
R;Lin, S.H.; Chow, L.P.; Chen, Y.C.; Chen, J.K.; Lin, J.X.
Eur. J. Biochem. 240, 564-569, 1996
A;Title: Probing the domain structure of abrin-a by tryptic digestion.
A;Reference number: S74110; MUID:97008945; PMID:8856055
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A;Residues: 262-276,'X',278-280;329-348;369-388;399-418 <LIW>
A;Experimental source: seed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A, Title: The complete primary structure of abrin-a B chain.
A, Reference number: S24133; MUID:92371656; PMID:1505674
                                                                                                                                                                                                                                                                                                                                                                                      A;Status: nucleic acid sequence not shown
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A; Residues: 89-108;154-172 <LIN>
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A, Molecule type: DNA
A, Residues: 'ME', 2-251 <EV2>
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Matches 80; Conserv
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A;Accession: JC1398
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